PROJECT REPORT

TO: PLANNING COMMISSION **AGENDA DATE:** November 16, 2023

FROM: PLANNING & DEVELOPMENT SERVICES **AGENDA TIME** 9:00 AM/ No. 3

United State Gypsum Company Quarry Expansion
and Water Well (26 acre feet) Project
CUP #20-0016 (Initial Study #22-0021)

PROJECT TYPE: Supplemental Environmental Impact Report SUPERVISOR DISTRICT #3

LOCATION: 26 miles northwest of Plaster City, east of Fish Canyon APN: 033-020-009 etal
Imp Co., CA (3 mi. east of County boundary, 6 mi. south of Hwy 78)

PARCEL SIZE: Well Site .13 acres (75' x 75'), and a pipeline site 12.7 acres (30' x 3.5 miles)

GENERAL PLAN (existing) Recreation/Open Space GENERAL PLAN (proposed) NA

ZONE (existing) S-2 (Open Space/Preservation) ZONE (proposed) N/A

GENERAL PLAN FINDINGS ☒ CONSISTENT ☐ INCONSISTENT ☐ MAY BE/FINDINGS

PLANNING COMMISSION DECISION: HEARING DATE: ____________

☐ APPROVED ☐ DENIED ☐ OTHER

PLANNING DIRECTORS DECISION: HEARING DATE: ____________

☐ APPROVED ☐ DENIED ☐ OTHER

ENVIROMENTAL EVALUATION COMMITTEE DECISION: HEARING DATE: 08/25/2022

INITIAL STUDY: #22-0021

☐ NEGATIVE DECLARATION ☐ MITIGATED NEG. DECLARATION ☒ EIR

DEPARTMENTAL REPORTS / APPROVALS:

PUBLIC WORKS	☐ NONE	☐ ATTACHED
AG COMMISSIONER	☐ NONE	☐ ATTACHED
APCD	☐ NONE	☐ ATTACHED
E.H.S.	☐ NONE	☐ ATTACHED
FIRE / OES	☐ NONE	☐ ATTACHED
SHERIFF	☐ NONE	☐ ATTACHED
OTHER		

REQUESTED ACTION:

Staff recommends that the Planning Commission hold a public hearing and hear all proponents and opponents of the proposed project, and advise the Board of Supervisors to approve the following actions:

A. Resolution for the Certification of the Final Subsequent Environmental Impact Report (FSEIR) SCH No. 2001121133 and Adopt Findings;
B. Resolution for the Adoption of the Mitigation Monitoring and Reporting Program (MMRP);
C. Resolution for the Approval of Conditional Use Permit (CUP) No. 20-0016 with conditions on the U.S. Gypsum Plaster City Quarry Expansion and Well No. 3 Project.

STAFF REPORT
PLANNING COMMISSION MEETING
November 16, 2023

Subject:

A. Final Subsequent Environmental Impact Report (FSEIR) (State Clearinghouse [SCH] No. 2001121133) for the U.S. Gypsum Plaster City Quarry Expansion and Well No. 3 Project, Findings of Fact and Resolution;
B. Mitigation Monitoring and Reporting Program (MMRP) and Resolution;
C. U.S. Gypsum Plaster City Quarry Expansion and Well No. 3 Project Conditional Use Permit (CUP) No. 20-0016 and Resolution.

Project Name: **U.S. Gypsum Plaster City Quarry Expansion and Well No. 3 Project**

Applicant: **United States Gypsum Company**
3810 West Evan Hewes Highway
Imperial, CA 92251

Project Location:

The USG Plaster City Quarry holdings consists of 2,048 acres and is in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line (see Attachments A and B). Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor's Parcel Number [APN] 033020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site (see Attachment C) is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-030-01-00, -05-00, -07-00, -09-00, -10-00, and -11-00). The 121-acre Old Kane Springs Road preservation site (see Attachment D) is located 7 miles northwest of the USG Quarry in San Diego County (APN 253-150-34-00).

The Quarry, well site, and pipeline alignment are accessed via West Evan Hewes Highway. Viking Ranch is accessed on an unpaved easement that proceeds east from the northern extension of De Gregorio Road in Borrego Springs, California. The Old Kane Springs Road preservation site is accessed via the unpaved Old Kane Springs Road off Highway 78 or Split Mountain Road in Ocotillo Wells, California

Project Summary:

The proposed project consists of approval of a Conditional Use Permit from the County of Imperial (County) for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the United States Gypsum (USG) Plaster City Quarry (Quarry). Together, these three project components are referred to as the "project area." Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies. This SEIR also evaluates potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Appendix D-4 of the Draft Subsequent Environmental Impact Report [DSEIR]). As described under the "Previous EIR/EIS" section below, USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of water of the United States at the Quarry. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this EIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies, including San Diego County which will issue a Major Grading Permit for the Viking Ranch restoration site.

Project Background:

A water well for Quarry operations was permitted in 1983 under CUP No. 635-83 for a maximum withdrawal of 7,000 gallons per day (Quarry Well No. 1). The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Consequently, the Quarry has historically received potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant.

Production from Quarry Well No. 1 declined due to incrustation and became unusable. Therefore, a second well (Quarry Well No. 2) was drilled in 1993 to replace the original well pursuant to CUP No. 635-83, which was re-issued for a new well. However, water production from Quarry Well No. 2 declined steadily over time.

Currently, Quarry Well No. 2 produces approximately 4,800 to 5,000 gallons per day (gpd), which is insufficient to meet USG's current need for approximately 15,000 gpd for dust control for Quarry operations. Therefore, USG proposes to replace existing Quarry Well No. 2 with planned Well No. 3 on USG-owned land located approximately 3 miles northeast of the Quarry. Quarry Well No. 3 would also replace an existing test well that was installed in 2001 at the proposed location of Quarry Well No. 3.

Quarry Well No. 3 is part of a larger project involving the expansion and modernization of USG's Plant and Quarry (Quarry Expansion), that was evaluated in the 2008 EIR/EIS, which was certified by the Imperial County Board of Supervisors (Board) on March 18, 2008. As such, the potential environmental impacts of proposed Quarry Well No. 3 were previously evaluated in the 2008 EIR/EIS.

On March 18, 2008, the Board approved a Conditional Use Permit for Quarry Well No. 3 in Case No. CUP08-0003, recorded document 2008-018433. However, USG did not initiate or obtain construction permits for Well No. 3 within the period set forth in Imperial Land Use Ordinance Section 90203.13. Therefore, CUP-080003 has expired.

Mitigation Sites

In addition to the 2008 EIR/EIS, additional analysis of the USG Expansion/Modernization Project was completed under NEPA as part of the process of obtaining the federal approvals required for the Quarry expansion. The NEPA process resulted in the completion of a Draft Supplemental EIS (SEIS) in June 2019 and a Final SEIS in November 2019 for the USG Expansion/Modernization Project. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of water of the United States at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 206-acre area at the Viking Ranch restoration site (see Attachment C) and the preservation of approximately 121-acres at the Old Kane Springs Road preservation site (see Figure 2-2c).

Environment Setting:

The Quarry, well site and pipeline alignment, Viking Ranch restoration site, and Old Kane Springs Road preservation site are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea-level. This area is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley. The Quarry and pipeline alignment are in an undeveloped area at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and along the southeast segment of the Fish Creek Wash. A portion of the northwest segment of the proposed pipeline alignment would cross Anza-Borrego Desert State Park.

The Quarry facilities, narrow-gauge railroad, and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the proposed project. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3.

The Viking Ranch restoration site was primarily former agricultural land located within the Coyote Creek Wash. However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The restoration site is located at the base of Coyote Mountain, which is part of the Santa Rosa Mountains range. The nearest sensitive receptor is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

The Old Kane Springs Road preservation site is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. It contains Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. It is surrounded by undeveloped desert lands, some of which are privately owned, but the predominate ownership in the area is Anza-Borrego Desert State Park.

Land Use Analysis:

Per Imperial County's General Plan, the land use designations for the portions of the project site that lie within Imperial County (i.e., the quarry site and expansion areas, well site and pipeline corridor) are Recreation/Open Space and Government/Special Public while the zoning designations are S-2 (Open Space/Preservation), BLM, and STATE.

Per San Diego County's General Plan, the land use designations for the portions of the project site that lie within San Diego County (i.e., the Viking Ranch Restoration Site and the Old Kane Springs Preservation Site) are Semi-Rural Residential (SR-4) and Rural Lanes (RL-30) while the zoning designations are S92 (General Rural).

Surrounding Land Use Ordinance:

Direction	Current Land Use	Zoning	General Plan
Well No. 3 Site			
North	Open Space	S-2	Recreation/Open Space
South	Open Space		
East	Open Space		
West	Open Space		
Pipeline Alignment			
North	Open Space	S-2	Recreation/Open Space
South	Open Space	BLM	Government/special Public

East	Open Space	STATE	
West	Open Space		
USG Plaster City Quarry			
North	Open Space	S-2 BLM	Recreation/Open Space
South	Open Space		
East	Open Space		
West	Open Space		
Viking Ranch Restoration Site			
North	Anza Borrego Desert State Park	S92	Semi-Rural Residential (SR-4)
South	Agriculture		
East	Anza Borrego Desert State Park		
West	Agriculture		
Old Kane Springs Road Preservation Site			
North	Undeveloped desert land	S92	Rural Lanes (RL-30)
South	Anza Borrego Desert State Park		
East	Undeveloped desert land; rural residential		
West	Anza Borrego Desert State Park		

Environmental Review:

On August 25, 2022, the Environmental Evaluation Committee (EEC) determined that CUP 20-0016 would have the potential to result in a significant effect on the environment and recommended a Subsequent Environmental Impact Report (SEIR) to be prepared. The EEC consists of a seven (7) member panel, integrated by the Director of environmental Health Services, Imperial County Fire Chief, Agricultural Commissioner, Air Pollution Control Officer, Director of the Department of Public Works, Imperial County Sheriff, and the Director of Planning and Development Services.

Imperial County circulated a Notice of Preparation (SCH No. 2001121133) and Initial Study for public and agency review and comment between July 18, 2022, and August 22, 2022. A public scoping meeting was held for the project on August 11, 2022, during which the project was presented and public input on the scope and content of the SEIR was accepted. Imperial County released a Draft SEIR on April 18, 2023, for a 45-day public review period which ended on June 2, 2022. Public comments were received from four agencies, one organization, and one individual. A Final SEIR was prepared by Imperial County providing the comments received on the Draft SEIR, responses to significant environmental points raised in these comments, and a revised Draft SEIR on November 3, 2023, and circulated at least 10 days prior to the November 16, 2023, Planning Commission Meeting.

RECOMMENDED ACTIONS

Staff recommends that the Planning Commission hold a public hearing and hear all proponents and opponents of the proposed project, and advise the Board of Supervisors to approve the following actions:

A. Resolution for the Certification of the Final Subsequent Environmental Impact Report (FSEIR) SCH No. 2001121133 and Adopt Findings;
B. Resolution for the Adoption of the Mitigation Monitoring and Reporting Program (MMRP);
C. Resolution for the Approval of Conditional Use Permit (CUP) No. 20-0016 with conditions on the U.S. Gypsum Plaster City Quarry Expansion and Well No. 3 Project.

Prepared By: Diana Robinson, Planning Division Manager
Planning & Development Services

Reviewed By: Michael Abraham, AICP, Assistant Director
Planning & Development Services

For

Approved By: Jim Minnick, Director
Planning & Development Services

Attachments:

Attachment A.	Regional Location Map
Attachment B.	Project Location – Quarry, Well No. 3, and Pipeline
Attachment C:	Project Location – Viking Ranch Restoration Site
Attachment D.	Project Location – Old Kane Sprins Road Preservation Site
Attachment E:	CEQA Findings and Resolution
Attachment F:	Draft Subsequent Environmental Impact Report
Attachment G:	Final Subsequent Environmental Impact Report
Attachment H:	Resolution for Conditional Use Permit CUP #20-0016

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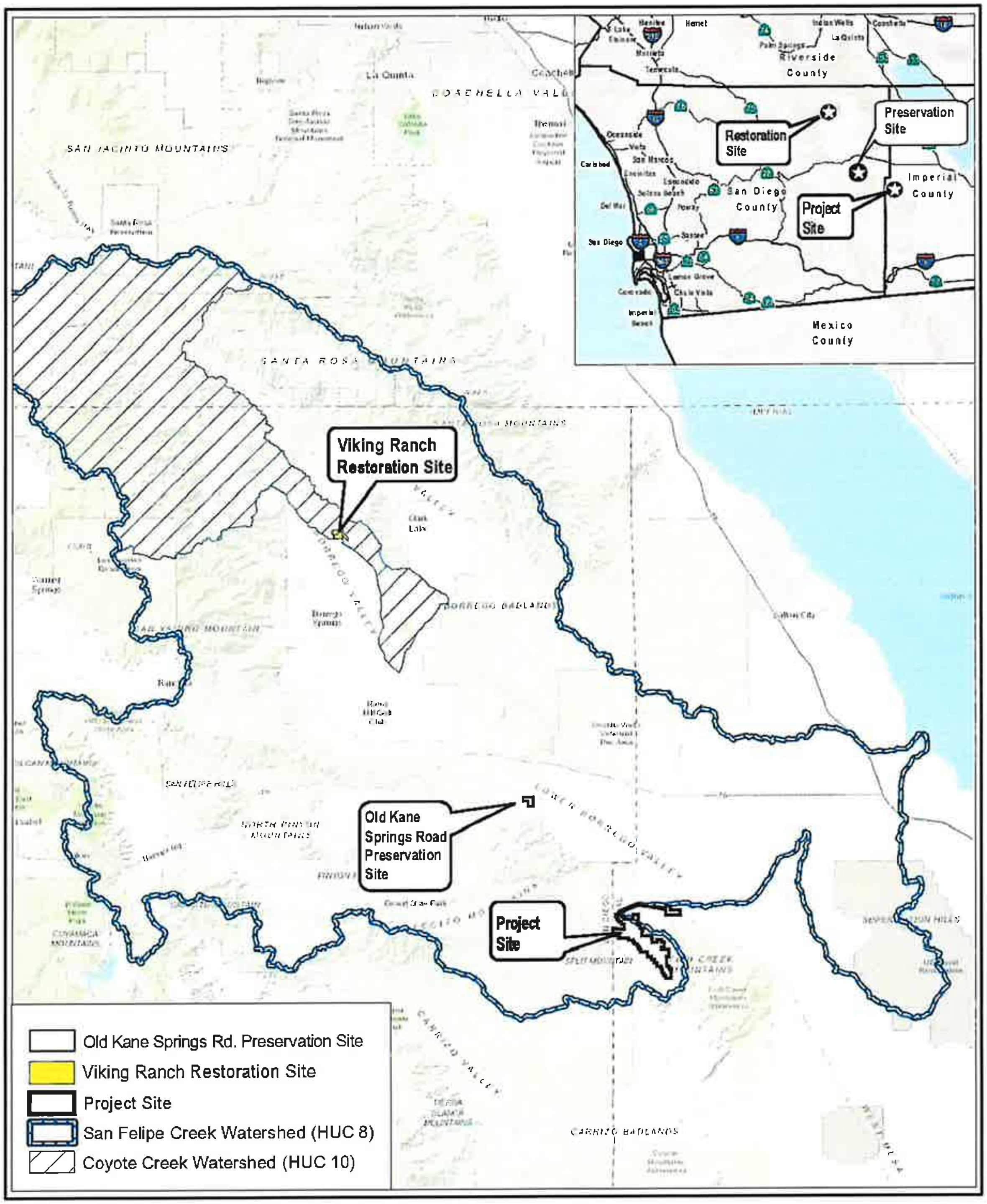
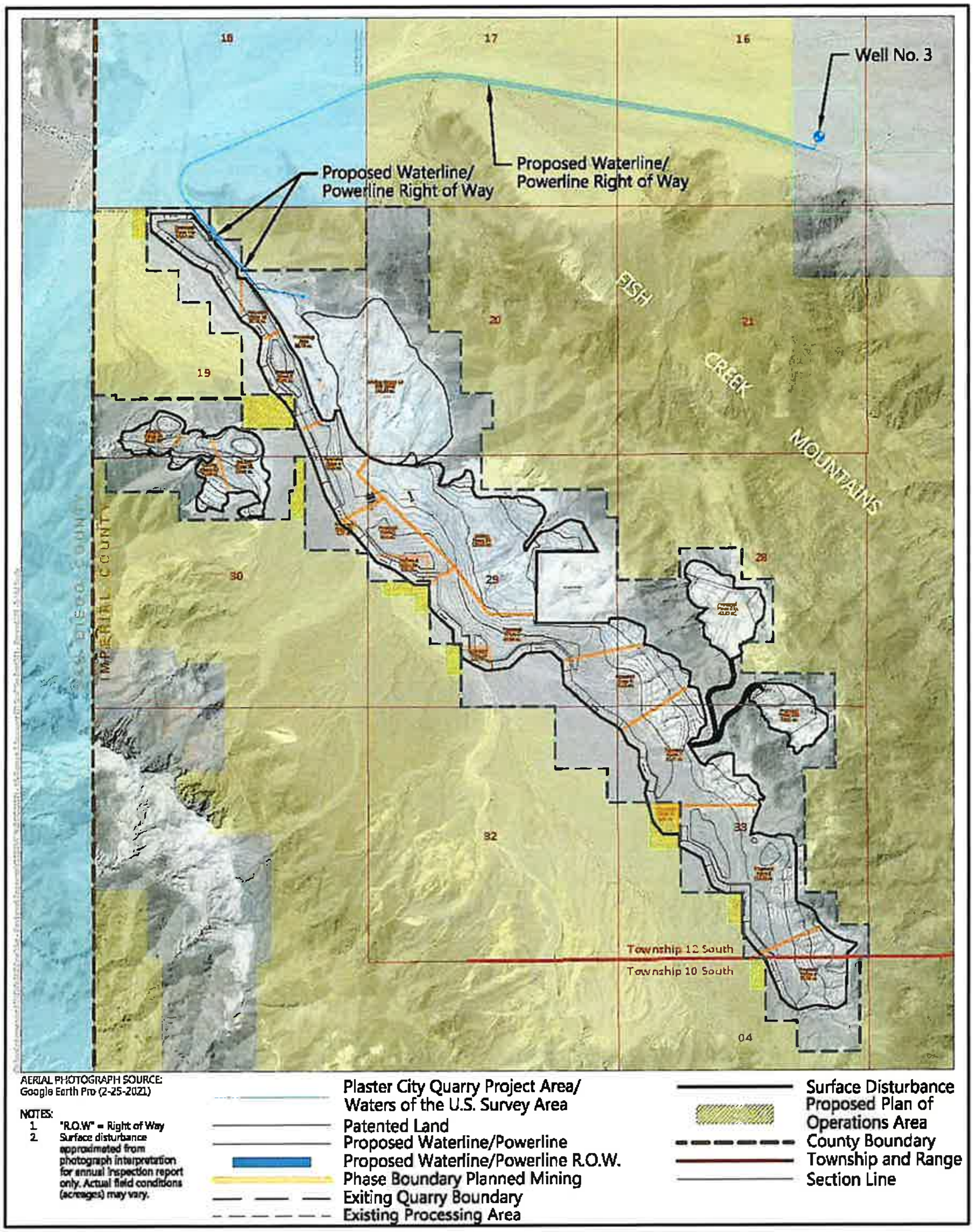
Attachment A: Regional Location Map



SOURCE: Dudek, 2021; Basemap USGS
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 2-1
Regional Location

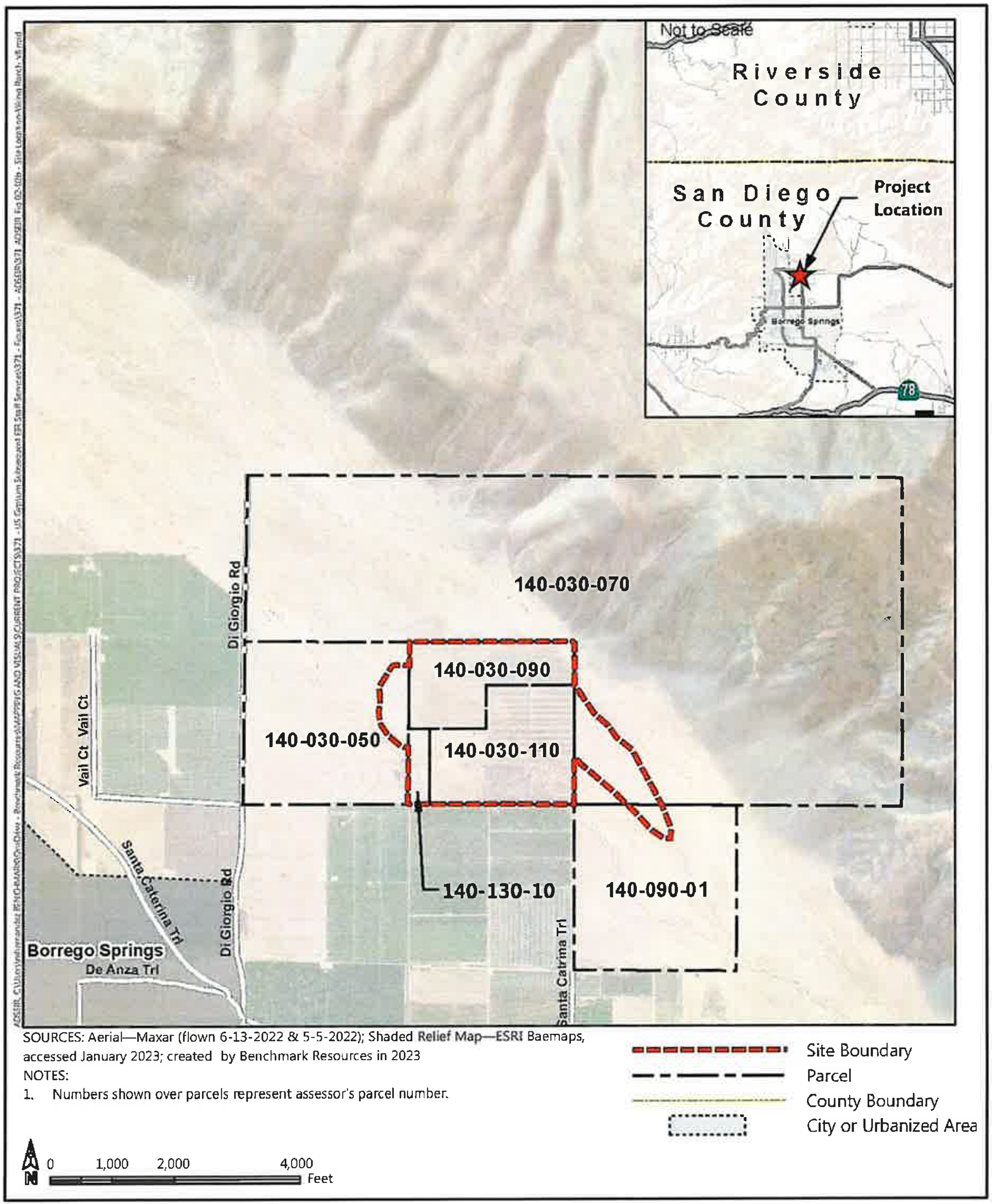
Attachment B: Project Location – Quarry, Well No. 3 and Pipeline



SOURCE: Benchmark Resources, 2021
NOTE: Image is not printed to scale.

Figure 2-2a
Site Location—Quarry, Well No. 3, and Pipeline

Attachment C: Project Location – Viking Ranch Restoration Site



SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

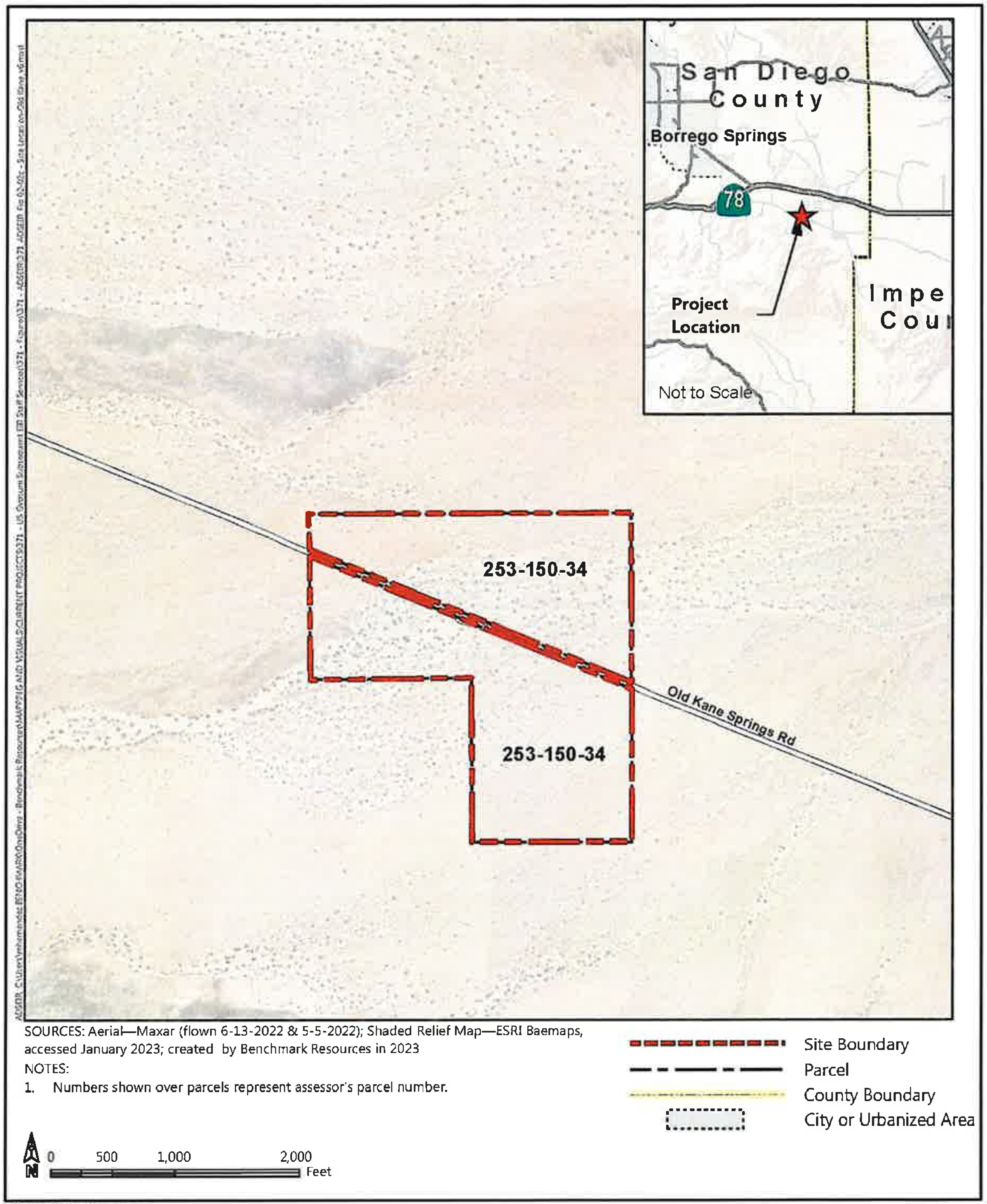
NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

SOURCE: Benchmark Resources, 2023
NOTE: Image is not printed to scale.

Figure 2-2b
Site Location—Viking Ranch Restoration Site

Attachment D: Project Location – Old Kane Springs Road Preservation Site



SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

SOURCE: Benchmark Resources, 2023
NOTE: Image is not printed to scale.

Figure 2-2c
Site Location—Old Kane Springs Road Preservation Site

Attachment E: CEQA Findings and Resolution

RESOLUTION NO. ____

A RESOLUTION OF THE IMPERIAL COUNTY PLANNING COMMISSION FOR APPROVAL OF THE MITIGATION MONITORING AND REPORTING PROGRAM FOR THE FOR U.S. GYPSUM PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

WHEREAS, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared in accordance with the requirements of the California Environmental Quality Act (CEQA), the State Guidelines, and the County's "Rules and Regulations to Implement CEQA as Amended"; and

WHEREAS, the Planning Commission of the County of Imperial has the authority to approve the MM&RP; and

WHEREAS, public notice of said application has been given, and the Planning Commission has considered evidence presented by the Planning & Development Services Department and other interested parties at a public hearing held with respect to this item on November 16, 2023.

NOW THEREFORE, the Planning Commission of the County of Imperial **DOES HEREBY RESOLVE** as follows:

SECTION 1. The Planning Commission has considered the proposed MMRP prior to making a decision on the project. The Planning Commission finds and determines that the Final Subsequent Environmental Impact Report (Final SEIR) is adequate and prepared in accordance with the requirements of CEQA, which analyzes environmental effects, based upon the following findings and determinations.

SECTION 2. That in accordance with State Planning and Zoning law and the County of Imperial regulations, the following findings for the approval and certification of the Final SEIR, MMRP and Findings of Fact have been made as follows:

1. 1. That the Final SEIR (SCH# 2020120143), CEQA Findings for the United States Gypsum Plaster City Quarry Expansion and Well No. 3 Project (project) has been prepared in accordance with the requirements of the California Environmental Quality Act, the State CEQA Guidelines, and the County's "Rules and Regulations to Implement CEQA, as Amended."
2. That the County has reviewed, analyzed, and considered the Final SEIR, the environmental impacts therein identified for this project, the CEQA Findings, and the MMRP and the entire Record of Proceedings prior to approving this project.
3. That the Final SEIR and the CEQA Findings reflect the independent judgment of the County.

4. That the CEQA Findings are supported by substantial evidence and backed by information provided to the County by experts, including but not limited to the County staff and the EIR preparer, on whom the County relies.
5. That the County accept as its own, incorporate as if set forth in full herein, and make each and every one of the findings contained in the CEQA Findings, including feasibility of mitigation measures pursuant to Public Resources Code Section 21081(a)/CEQA Guidelines Section 15091.
6. That the MMRP is designed to ensure that during project implementation, the Operator and any other responsible parties shall implement the project components and comply with feasible mitigation measures identified in the CEQA Findings, the project entitlements, and the MMRP and that these measures are fully enforceable through permit conditions, agreements, and/or other measures, such as their inclusion in the MMRP.
7. That the project will not individually or cumulatively have an adverse effect on fish and wildlife resources, as defined in Section 711.2 of the Fish and Game Code.
8. That the Record of Proceedings consists of the Final SEIR (and all its technical reports and addendums thereto); the County staff reports; the CEQA Findings; the MMRP; the various project entitlements and documents referenced therein; all final reports, applications, memoranda, maps, letters, and other planning documents prepared by the EIR planning/environmental consultant; all final reports, memoranda, maps, letters, and other planning documents prepared by the County staff; all documents submitted by members of the public and public agencies in connection with the Final SEIR; minutes and transcripts of all public meetings and public hearings; all written and verbal public testimony presented during a noticed public hearing for the proposed project which such testimony was taken and any and all other materials which constitute the record of proceeding pursuant to Public Resources Code Section 21167.6(e); and matters of common knowledge to the County staff and Planning Commission, including, but not limited to the County General Plan, the County Land Use Ordinance, County policies, which may be found during regular business hours, and the Imperial County Planning & Development Services Department at 801 Main Street, El Centro, CA 92243.
9. That the County does hereby approve the Findings and the MMRP.

NOW, THEREFORE, based on the above findings, the Planning Commission of the County of Imperial **DOES HEREBY approves** the MMRP for the Final SEIR (SCH# 2001121133):

Rudy Schaffner, Chairperson
Imperial County Planning Commission

I hereby certify that the preceding resolution was taken by the Planning Commission at a meeting conducted on **November 16, 2023**, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

James A Minnick, Director of Planning & Development Services
Secretary to the Planning Commission

Attachment F: Draft Subsequent Environmental Impact Report

USG PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

CUP APPLICATION 20-0016

INITIAL STUDY IS 22-0021

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

VOLUME I

Prepared By:

COUNTY OF IMPERIAL
Planning & Development Services Department
801 Main Street
El Centro, CA 92243
(442) 265-1736
www.icpds.com

APRIL 2023

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EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

INTRODUCTION

United States Gypsum Company (US Gypsum; USG; the Applicant) has applied to Imperial County (County) for a Conditional Use Permit (CUP) to develop a groundwater well (Well No. 3) and associated pipeline to support the expansion of mining operations at its Plaster City Quarry (Quarry) see Figure ES-1, "Regional Location," for details. In addition, this Subsequent Environmental Impact Report (SEIR) evaluates mining operations at the Quarry under the 2008 Quarry Expansion and restoration and preservation of two off-site properties: the Viking Ranch restoration site and, the Old Kane Springs Road preservation site. Together these components make up the proposed project. A detailed description of the proposed project can be found in Chapter 2, "Project Description."

The Plaster City Quarry and proposed site of Well No. 3 were evaluated in the United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement (2008 EIR/EIS), which was certified by the County in 2008. The 2008 EIR/EIS contains information still relevant to the current CEQA review. The proposed project contains revisions to the project and new information that were not analyzed in the 2008 EIR. The County has, therefore, determined that it will prepare a SEIR. The SEIR will review and update some portions of the 2008 EIR/EIS because of project revisions, changed circumstances, and availability of new information that was not available in 2008. As a result, the relevant 2008 EIR/EIS sections will be reevaluated and expanded considering project revisions, new information, and changed circumstances, as required by CEQA.

Pertinent mitigation measures to the project site from the 2008 EIR/EIS are provided in their relevant topical sections, as outlined in Table ES-1, "2008 EIR/EIS Mitigation Measure Locations," below.

Table ES-1
2008 EIR/EIS Mitigation Measure Locations

Mitigation Topic	2008 EIR/EIS Location	SEIR Location
Air Quality	Section 3.6	Section 4.1
Biological Resources	Sections 3.4 and 3.5	Section 4.2
Cultural Resources	Section 3.8	Section 4.3
Geology, Soils and Paleontological Resources	Section 3.2	Section 4.4
Greenhouse Gas Emissions	Section 4.3.12	Section 4.5
Hydrology and Water Quality	Section 3.3	Section 4.6
Land Use and Planning	Section 3.9	Section 4.7
Tribal Cultural Resources	N/A	Section 4.8

This Executive Summary provides an overview of the proposed project, describes alternatives to the proposed project, and presents a summary of the environmental impacts and related mitigation identified in the SEIR.

PUBLIC REVIEW

This SEIR is available for public review and comment during the 45-day period identified on the notice of availability/notice of completion (NOA/NOC) of an SEIR, which accompanies this document. This SEIR and all supporting technical documents and reference documents are available for public review at the Imperial County Planning and Development Services Department located at 801 Main Street in El Centro, California 92243 and on the Imperial County website at:

http://icpds.com/planning/environmental-impact-reports/draft-eirs/

During the 45-day public comment period, written comments on the SEIR may be submitted to the Planning and Development Services Department at the following address:

Attn.: Ms. Diana Robinson, Planning Division Manager
Imperial County Planning and Development Services Department
801 Main Street
El Centro, California 92243

Written comments on the SEIR may alternately be submitted via e-mail with the subject line "USG Plaster City Quarry Expansion and Well No. 3 Project SEIR" to DianaRobinson@co.imperial.ca.us.

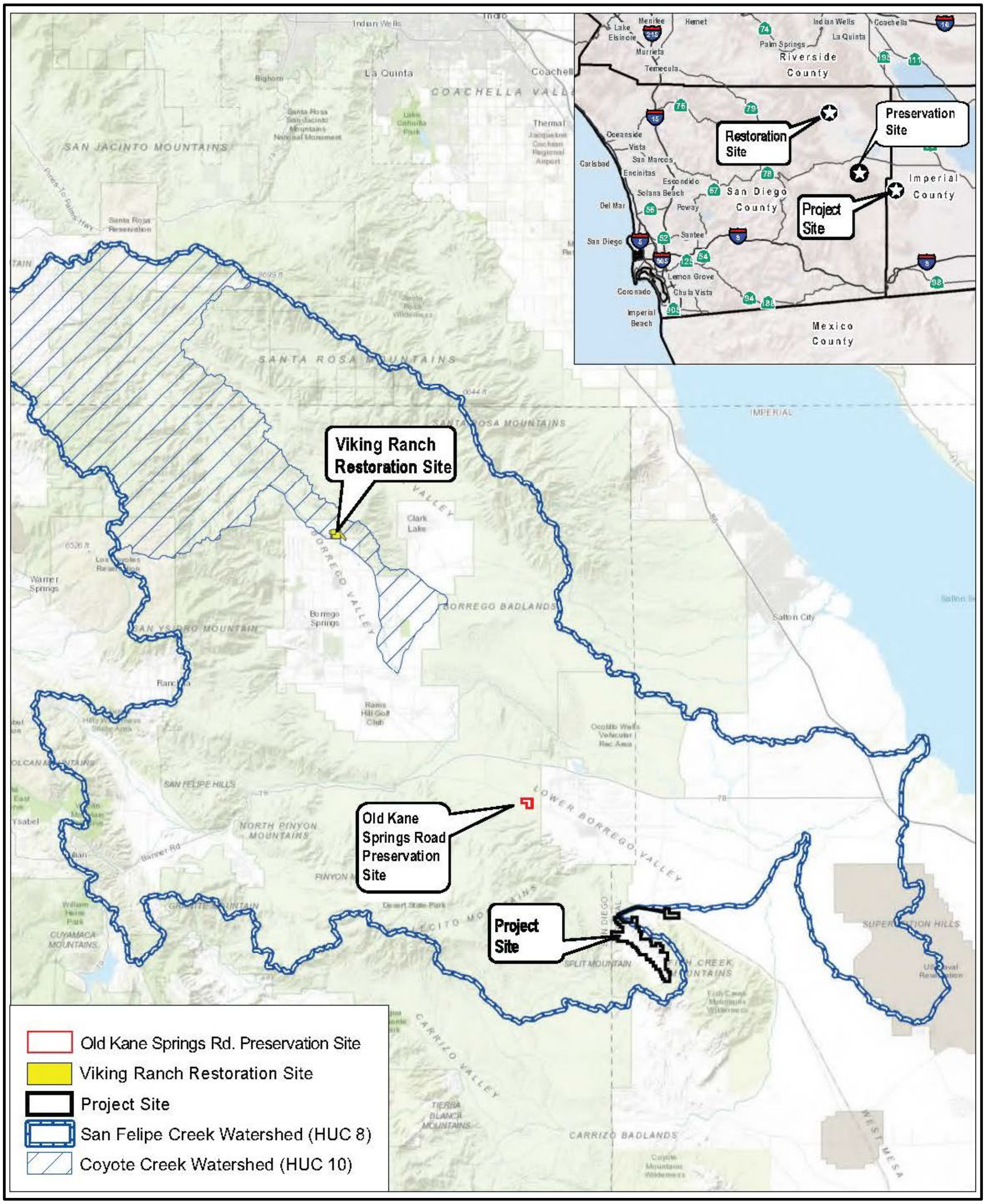
Oral comments on the SEIR are welcome and may be stated at a public meeting, which shall be held as indicated on the NOA/NOC.

Following the public review and comment period, the County will respond to all written and oral comments received on the environmental analysis in this Draft SEIR. The responses and any other revisions to the SEIR will be prepared as a response-to-comments document. The SEIR and its appendices, together with the response-to-comments document will constitute the Final SEIR for the proposed project.

OVERVIEW OF THE PROPOSED PROJECT

Site Location

The USG Plaster City Quarry holdings consists of 2,048 acres and is in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor's Parcel Number [APN] 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-030-05-00, -07-00, -09-00, -10-00, and -11-00). The 121-acre Old Kane Springs Road preservation site is located 7 miles northwest of the USG Quarry in San Diego County (APN 253-150-34-00).



SOURCE: Dudek, 2021; Basemap USGS
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure ES-1
Regional Location

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Project Objectives

The proposed project includes the following objectives:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;
2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
3) Meet market demands for gypsum products;
4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
5) Concurrently reclaim Quarry site for post-mining uses as Open Space;
6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Port Cologne Act.

Project Features

As stated previously, the proposed project consists of a CUP for development of a groundwater well and associated pipelines as well as restoration and preservation of two off-site properties. The applicant proposes no change to any fundamental elements of the existing operation (e.g., mining methods, processing operations, production levels, truck traffic, hours of operation).

Required Approvals

As the local land use authority, Imperial County is the public agency with the greatest responsibility for approving the project as a whole and is therefore the lead agency for purposes of environmental review under CEQA. Other agencies may have permitting or approval authority over various aspects of the project. These agencies include the following:

- County of San Diego (Major Grading Permit)
- California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
- Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)

The following public agency approvals have already been obtained:

- U.S. Bureau of Land Management (Right-of-Way Grants [Case file numbers CACA-056908 and CACA-044014)

DRAFT SEIR SCOPE AND ISSUES EVALUATED

Issues Evaluated and Issues Eliminated from Further Consideration

While CEQA does not require preparation of an Initial Study when the lead agency elects to prepare an EIR or SEIR (CEQA Guidelines Section 15060[d]), the County has prepared an Environmental Checklist Form / CEQA Initial Study to substantiate its scoping process in evaluating the potential significance of the project regarding the Appendix G criteria discussed above. The evaluation regarding the significance of those issues that are not discussed in detail in the SEIR is provided in the Initial Study (included as Appendix A-1, "Initial Study," of the SEIR) and discussed further in Chapter 1, "Introduction," of the SEIR.

As an initial step in the environmental review process, issues identified in the Environmental Checklist of Appendix G of the CEQA Guidelines were considered to determine whether the project would have the potential to result in significant impacts associated with each issue. The initial review determined that the project may result in potentially significant adverse impacts associated with the following Appendix G Environmental Checklist resource topics:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology, Soils, and Paleontological Resources
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Tribal Cultural Resources
- Mandatory Findings of Significance

The initial review determined that the project would not result in significant adverse impacts associated with the following resource topics and eliminated these issues from further consideration in the SEIR:

- Aesthetics
- Agricultural and Forestry Resources
- Energy
- Hazards and Hazardous Materials
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Utilities and Services Systems
- Wildfire

Alternatives

The CEQA Guidelines specify that an SEIR must describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain the basic project objectives (Guidelines Section 15126.6). The "no project" alternative, which considers what impacts would occur if conditions continued, must be considered (Guidelines Section 15126.6[e]), and the SEIR must also identify the environmentally superior alternative. If the "no project" alternative is the environmentally superior alternative, the SEIR must identify an environmentally superior alternative from among the other alternatives (Guidelines Section 15126.6[e][2]).

Summary of Alternatives

The alternatives evaluation considered several potential alternatives. Some were eliminated as they were determined to either not have the potential to feasibly achieve the basic project objectives and/or reduce significant project impacts. The following alternatives were selected and analyzed/compared to the project and are evaluated in the SEIR:

Alternative 1: No Project Alternative

Under the No Project Alternative, a new Conditional Use Permit (CUP) would not be granted, and the proposed Well No. 3 and associated pipeline would not be constructed. As a result, the Quarry operation would continue to utilize Well No. 2 to produce water for dust suppression. As described in Section 2.2 of this SEIR, Well No. 2 is not a reliable water source and fails to produce sufficient supply to meet demand. In addition, restoration and preservation of the Viking Ranch and Old Kane Springs Road sites would not occur. As a result, impacts to Waters of the US resulting from Quarry expansion could not be fully mitigated as required and mining activities would be curtailed. Thus, Alternative 1 would involve an overall reduction in mining footprint, volume, and duration as well as elimination of construction activities associated with the well, pipeline, and restoration site.

Alternative 2: Lower Quarry Watershed Reduced Mining Footprint "A" Alternative

Alternative 2 is the same as the proposed project except that Phase 10 would not be mined to its full capacity and Phase 10P would be eliminated entirely from the proposed mining plan in order to reduce losses of waters of the United States. USG would reduce the mining depth in Phase 10, grading north to the base grade of Fish Creek (Figure 6-1). Phase 10P is considered for elimination given its position in the northernmost end of the Quarry watershed, its close proximity to Fish Creek, and the relatively low quantity of gypsum ore that would be extracted from this phase compared to other phases in the mining plan.

Under this alternative, the stormwater berm would be eliminated south of Phase 2. Instead, the natural topography of the upper Quarry watershed would direct surface water away from Phases 6 through 9. Using natural landforms would reduce the length of the berm by one mile compared with the proposed project and would eliminate the need for a complex system of transverse levees with anchored berms in the upper Quarry watershed. The stormwater berm would begin west of Phase 2, where only one transverse levee would be required, and would extend northward through Phase 10.

Phase 10 mining would occur as proposed to a reduced depth connecting with Phase 10P and progressing at an angle suitable to maintain gravity flow. A conveyance channel roughly 200 feet wide would result at the northernmost boundary of Phase 5, extending north through Phase 10 and 10P until its confluence with Fish Creek. Approximately 5.4 million tons less gypsum ore would be mined under this alternative than under the proposed project. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 2.81 years.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

Alternative 3: Lower Quarry Watershed Reduced Mining Footprint "B" Alternative

Alternative 3 is the same as the proposed project except that the mining footprint along the western boundaries of Phases 4 and 5, where Annex Mill Site #4 encroaches into an unnamed ephemeral wash, would be reconfigured to reduce losses of waters of the United States (Figure 6-2). Phases 4 and 5 were selected for reconfiguration because of their close proximity to existing administrative/office facilities where blasting is not ideal due to noise and the depth of overburden needing to be stripped in order to mine the gypsum ore. The stormwater berm would be configured as described for Alternative 2 except that it would be modified to exclude the eliminated portions of Phases 4 and 5, include Phases 10 and 10P, and extend northward from Phase 2 through the northern limit of Phase 10P. This alternative would reduce the amount of gypsum ore mined by approximately 11.87 million tons. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 6.18 years.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

Alternative 4: Middle Quarry Watershed Reduced Mining Footprint Alternative

Alternative 4 is the same as the proposed project except that Phases 2P, 3P (North) and 3P (South) would be eliminated from the proposed mining plan to reduce losses of waters of the United States. As shown in Figure 6-3, the proposed stormwater berm would be modified to exclude the eliminated phases, including Phases 10 and 10P, and extend through the northern limit of Phase 10P.

As a result of this reduced mining footprint, approximately 2.33 million tons less gypsum would be mined. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 1.21 years compared with the proposed project.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

Alternative 5: Middle Quarry Watershed Reduced Mining Footprint Alternative

Alternative 5 is the same as the proposed project except that the mining footprint in Phases 7 and 8 would be reconfigured to reduce losses of waters of the United States (Figure 6-4). Under this alternative, the mining boundaries of Phases 7 and 8 would be moved east parallel with the main drainage channel. The stormwater berm would be as described for Alternative 2 but would include all of Phases 10 and 10P.

The overall mining footprint would be reduced by 34 acres, thereby decreasing potential mining beneath the valley alluvium where gypsum ore has been determined to be most abundant. The amount of gypsum ore mined under this alternative would be approximately 13.04 million tons less than under the proposed project. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 6.79 years.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

Environmentally Superior Alternative

CEQA §15126.6(e)(2) requires that an EIR identify the environmentally superior alternative. CEQA also requires that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative from the remaining alternatives. In consideration of the alternatives evaluation presented above, Alternative 1: No Project Alternative would result in fewer impacts as compared to the project and the other alternatives considered. This is due to the fact that Well No. 3 would not be constructed, and additional groundwater would not be pumped from the aquifer that underlies the project site. As such, the County must identify the environmentally superior alternative from the remaining alternatives.

Based on the analysis above and excluding the No Project Alternative, the County concludes that Alternative 5, Upper Quarry Watershed Reduced Mining Footprint Alternative, is the environmentally superior alternative as it would result in the greatest reduction of mining volume and duration and would reduce impacts to Waters of the US by 11.28 acres.

The alternatives analysis and conclusions reached regarding the environmentally superior alternative do not determine the ability of Alternative 5 to be an economically viable option for the Applicant.

Summary of Impacts and Mitigation Measures

Table ES-2, “Summary of Project Impacts and Mitigation Measures,” provides a summary of the project impacts identified and evaluated in the SEIR, presents mitigation measures identified in the SEIR, and lists the impact significance both without and with mitigation applied. As shown in the table, several impacts are found to be less than significant and do not require mitigation. All remaining impacts would be significant or potentially significant prior to the implementation of mitigation measures but would be reduced to less than significant with mitigation applied. The project would not result in any impacts that would remain significant and unavoidable after mitigation.

In addition to evaluating project-specific impacts, an SEIR must also evaluate cumulative impacts (see Chapter 5, “Cumulative Impacts”). Cumulative impacts are those that would result from project impacts when combined with impacts of other past, present, or reasonably foreseeable projects. The analysis determined that the project would not result in any significant and unavoidable cumulative impacts.

Table ES-2
Summary of Project Impacts and Mitigation Measures

Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
AIR QUALITY			
Impact 4.1-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LTS	None required.	LTS
Impact 4.1-2: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard	LTS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.6-1a:*** *USG shall ensure all equipment is maintained and tuned according to manufacturer's specifications.* ***Mitigation Measure 3.6-1b:*** *USG shall schedule production activities to minimize daily equipment operations and idling trucks.* ***Mitigation Measure 3.6-1c:*** *USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.* Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.1-1a:*** *The following standard mitigation measures for fugitive* PM_{10} *control shall be implemented throughout project construction activities:* *a. All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.* *b. All on site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		suppressants and/or watering. c. *All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.* d. *The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.* e. *All track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.* f. *Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at point of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.* g. *The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.* ***Mitigation Measure 4.1-1b:*** *The following standard mitigation measures for construction combustion equipment shall be implemented throughout project construction activities:* a. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.* b. *Minimize idling time either by shuttling equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		c. Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use. *d. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*	
Impact 4.1-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LTS	None required.	LTS
Impact 4.1-4: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People	LTS	None required.	LTS
BIOLOGICAL RESOURCES			
Impact 4.2-1: The Project Could Have Substantial Adverse Effects on Special-Status Plant Species or Plant Communities	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.5-1a:*** *Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.* ***Mitigation Measure 3.5-1b:*** *Phasing of Quarry development and closure: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.* Implement the following existing mitigation measures from the 2019 EIS: ***Mitigation Measure 3.4-5:*** *Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk (Tamarix) and fountain grass (Pennisetum) in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		the area associated with the Proposed Action, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the Proposed Action. ***Mitigation Measure 3.4-10:*** *Critical Habitat. To minimize impacts to PBS designated critical habitat, USG will conduct 1:1 on-site reclamation as specified in the Mining and Reclamation Plan for all project disturbance areas. Additionally, USG will acquire or set aside an area of designated critical habitat away from the Quarry's operations for long-term wildlife habitat conservation, to minimize the loss of designated critical habitat within the Quarry. The habitat acquisition measure will be applicable for public lands directly affected by the Proposed Action. The acquired lands will consist of native desert vegetation within designated PBS critical habitat. Acquisition lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM and Wildlife Agencies.*	
Impact 4.2-2: The Project Could Have Substantial Adverse Effects on Special-Status Wildlife Species	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.5-1c:*** *Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.* ***Mitigation Measure 3.5-1d:*** *Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the U.S. Fish and Wildlife Service (USFWS) that will: (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them. *Mining shall be conducted only as approved in the Plan of Operation and the Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the Reclamation Plan. USG shall instruct its employees and other visitors to the mine to avoid peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. USG shall establish a training program, including new-employee orientation and annual refresher, to educate employees regarding bighorn sheep and the importance of avoidance. USG shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the quarry's environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.* ***Mitigation Measure 3.5-1e:** Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.* *Regarding the development of Well No. 3 and the association pipeline, the 2008 EIR/EIS found that, with the exception of the flat-tailed horned*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		lizard, impacts to all other special-status wildlife species were found to be less than significant; the flat-tailed horned lizard was observed basking on the rails of the narrow-gauge line. The BLM and other cooperating agencies have implemented a Flat-tailed Horned Lizard Rangewide Management Strategy (2003 Revision) that would minimize adverse impacts and mitigate for residual impacts throughout the flat-tailed horned lizard's geographic range. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to the Flat Tailed Horned Lizard: Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-5:*** *(See full text under Impact 4.2-1)* ***Mitigation Measure 3.4-6:*** *Mining Activity Monitoring and Reporting. Prior to the beginning of any Quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to the approval of the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS.* *The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation and mitigation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:* • *The Designated Biologist will notify BLM's Authorized Officer and USFWS at least 14 calendar days before the initiation of Quarry expansion of new ground-disturbing activities.* • *The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys and will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• *The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and USFWS in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.* • *The Designated Biologist or Biological Monitor will visit the Quarry site periodically (no less than once per month) throughout the life of the project to administer the Worker Education Awareness Program (WEAP) and ensure compliance with the plans and programs listed below.* – *The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of these programs/plans as well as compliance/non-compliance with each conservation measure: (1) Integrated Weed Management Plan; (2) WEAP; (3) Reclamation Plan; (4) Wildlife Mortality Reporting Program; and (5) PBS Monitoring Plan.* ***Mitigation Measure 3.4-7:*** *WEAP. Prior to project approval, USG will develop a WEAP, to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction, operations, and maintenance personnel. The WEAP will be approved by the BLM, USFWS, and CDFW, and will include the following: (1) Descriptions of special-status wildlife of the region, including PBS, and including photos and how to identify adult and sub-adult male and female PBS; (2) The biology and status of special-status species of the area, including PBS; (3) A summary of the avoidance and minimization measures and other conservation measures; (4) An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data; (5) An explanation of the flagging or other marking that designates authorized*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		work areas; and (6) Actions and reporting procedures to be used if any wildlife, including PBS is encountered. ***Mitigation Measure 3.4-8:*** *Wildlife Impact Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project (e.g., Plant and Quarry operations).* • *To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.* • *The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven days prior to initial site clearing for Quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist in consultation with CDFW will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active.* • *For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the work day. The Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85ºF) for the presence of flat-tailed horned lizard or Colorado Desert fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of any wildlife, particularly including the flat-tailed horned lizard or Colorado Desert fringe-toed lizard, prior to backfilling.* • *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity. • *Speed limits along all access roads will not exceed 15 miles per hour.* • *Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.* • *The boundaries of all areas to be newly disturbed (including Quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground-disturbing activities occur outside the staked area during initial Quarry expansion or ground disturbance.* • *Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the PoO).* • *No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.* • *To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, Quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.* • *No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		within the project site, on off-site project facilities and activities, or in support of any other project activities. - *Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.* - *Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.* ***Mitigation Measure 3.4-9:*** *Burrowing Owl Avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with CDFW guidelines, including provision of replacement burrows prior to the exclusion.* ***Mitigation Measure 3.4-10:*** *(See full text under Impact 4.2-1)* ***Mitigation Measure 3.4-11:*** *PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		federal action area by funding the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW. ***Mitigation Measure 3.4-12:*** *PBS Avoidance and Minimization. USG will implement the following measures throughout the life of the project.* • *New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.* • *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities and will walk the perimeter of the Quarry expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.* • *If a PBS enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.* • *Fencing installed anywhere within the Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to PBS.* Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.2-2a:*** *Minimize Temporary Use Areas: During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed for immediate use. ***Mitigation Measure 4.2-2b:*** *Wildlife Avoidance and Minimization Measures—Viking Ranch Restoration Site)* *To avoid impacts to common and special-status wildlife on the Viking Ranch Restoration site, the following measures shall be implemented during restoration activities:* • *The clearing of vegetation and other initial site disturbance shall occur outside of the bird nesting season. Grading shall take place between September 1 and March 1. If grading must occur during the nesting season, a qualified wildlife biologist and biological monitor shall conduct a nesting bird survey prior to clearing work. If an active nest is found it shall be protected in place with a work-free buffer with a radius determined by the biologist in consultation with the CDFW.* • *Preconstruction surveys for San Diego black-tailed jack and/or active burrows shall be conducted by a qualified biologist prior to initiating restoration activities on the site. If any individuals are observed in a burrow or shelter form, they will be allowed to leave the area on their own accord. Once the burrow is determined clear of rabbits, a qualified biologist shall collapse the burrow or shelter form.* • *Speed limits on all access roads shall not exceed 15 miles per hour.* • *Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.* • *The boundaries of all areas to be newly disturbed (including areas proposed for clearing and grading, access roads, staging and equipment storage areas) shall be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment shall be confined to the flagged area. The biological monitor shall be onsite to ensure that no ground disturbing activities*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		occur outside of the flagged area during vegetation clearing, grading, or other ground disturbing activities. • *No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight.* • *To avoid wildlife entrapment all pipes and other construction materials and supplies shall be covered or capped in storage areas, and at the end of each workday. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.* • *To avoid wildlife attractants, all trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater shall be avoided or removed to avoid attracting wildlife.* • *Any injured or dead wildlife encountered during site restoration or monitoring shall be reported to the project biologist, biological monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the project biologist or biological monitor shall notify the USFWS and/or CDFW as appropriate, within 24 hours of the discovery.*	
Impact 4.2-3: The Project Could Have Substantial Adverse Effects on State or Federally Protected Wetlands	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.5-1f:*** *Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-13.*** *Future Quarry Phasing Notification and Review. USG will notify the BLM, CDFW, and USFWS 90 days prior to initiating future mining activities in the four phases nearest to the highest PBS occurrence and habitat connectivity areas (phases 6Bp, 7Bp, 8, and 9). Upon notification, the agencies will coordinate with USG to review PBS occurrence and activity in the vicinity obtained during the intervening years, as well as relevant documentation of Nelson's bighorn sheep behavior near other mining operations. PBS avoidance and minimization measures may be revised as needed to conform to new information.*	
Impact 4.2-4: The Project Would Not Interfere Substantially with Native Wildlife Movement or Impede Nursery Site Use	PS	Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-8:*** *(See full text under Impact 4.2-2)* ***Mitigation Measure 3.4-12:*** *(See full text under Impact 4.2-2)*	
Impact 4.2-5: The Project Would Not Conflict with Any Local Policies or Ordinances Protecting Biological Resources or with Any Adopted Habitat Conservation Plan or Natural Community Conservation Plan	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.5-2:*** *USG comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.* Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-8:*** *(See full text under Impact 4.2-2)*	
CULTURAL RESOURCES			
Impact 4.3-1: The Project Could Cause a Substantial Adverse Change in the Significance of a Historical Resource Pursuant to §15064.5.	LTS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.8-3:*** *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		prepared and implemented. Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.6-1:*** *Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.* ***Mitigation Measure 3.6-2:*** *Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way. A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.* Implement the following <u>newly</u> proposed mitigation measure: ***Mitigation Measure 4.3-1:*** *Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Viking Ranch APE shall be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. The Plan shall describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural*	

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		resources from project impacts. It shall also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during project implementation.	
Impact 4.3-2: The Project Could Cause a Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5.	LTS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.8-3:*** *(See full text under Impact 4.3-1)* Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.6-1:*** *(See full text under Impact 4.3-1)* ***Mitigation Measure 3.6-2:*** *(See full text under Impact 4.3-1)* Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.3-1:*** *(See full text under Impact 4.3-1)*	LTS
Impact 4.3-3: The Project Could Disturb Any Human Remains, Including Those Interred Outside of Dedicated Cemeteries	PS	Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.3-2:*** *Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project activities, the project operator shall immediately halt work within 50 feet of the find, contact the Imperial County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4(e)(1). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, with the MDL regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*	LTS
GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES			
Impact 4.4-1: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geological Feature	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.2-1a****: Reclaimed cut slopes in the alluvial materials*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		(map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet. ***Mitigation Measure 3.2-1b**: Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.* ***Mitigation Measure 3.2-1c**: Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.* Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.2-3:** Once the pipeline alignment is located and staked, a pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the area associated with the Proposed Action. For any areas where potential resources cannot be avoided by the pipeline construction, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) should be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.* Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.4-1:** Pre-construction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.*	
GREENHOUSE GAS EMISSIONS			
Impact 4.5-1: Greenhouse Gas Emissions Generated by Project Activities Could Have a Significant Impact on Global Climate Change	LTS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 1:** USG has already acquired approximately $1.6 million in emission credits for the Project to meet applicable air quality*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		standards. Similarly, to the extent necessary, USG will acquire recognized carbon credits to offset the project's increased GHG emissions. ***Mitigation Measure 3.6-1a:*** *USG shall ensure all equipment is maintained and tuned according to manufacturer's specifications.* ***Mitigation Measure 3.6-1b:*** *USG shall schedule production activities to minimize daily equipment operations and idling trucks.* ***Mitigation Measure 3.6-1c:*** *USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.*	
Impact 4.5-2: Consistency with Applicable GHG Plans, Policies, or Regulations	LTS	None required.	LTS
HYDROLOGY AND WATER QUALITY			
Impact 4.6-1: The Project Could Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface or Ground Water Quality	LTS	None required.	LTS
Impact 4.6-2: The Project Could Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin	LTS	None required.	LTS
Impact 4.6-3: The Project Could Substantially Alter the Existing Drainage Pattern of the Site Resulting in Substantial Erosion or Siltation, Flooding on or Offsite, the Provision of Substantial Additional Sources of Polluted Runoff, or the Impediment or Redirection of Flood Flows	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.3-7:*** *An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off. Implement the following newly proposed mitigation measure: ***Mitigation Measure 4.6-1:*** *The final design for the proposed berm along the westerly edge of the Quarry shall incorporate the recommendations provided in the Hydrologic and Water Quality Study prepared by Dudek dated April 2018 and appended to this SEIR. These recommendations include a 50-foot-wide conveyance channel on the western side of the berm and armoring of the westerly bank of the berm with rock riprap.*	
Impact 4.6-4: The Project Could Release Pollutants in the Event of Inundation rom Flood, Tsunami, or Seiche	LTS	None required.	LTS
Impact 4.6-5: The Project Could Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	LTS	None required.	LTS
LAND USE AND PLANNING			
Impact 4.7-1: Physically Divide an Established Community	LTS	None required.	LTS
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LTS	None required.	LTS
TRIBAL CULTURAL RESOURCES			
Impact 4.8-1: Would the Project Adversely Affect the Significance of a Tribal Cultural Resources, As Defined in PRC §21074	LTS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.8-3:*** *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.6-1:*** *Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.* ***Mitigation Measure 3.6-2:*** *Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way. A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.* Implement the following newly proposed mitigation measure: ***Mitigation Measures:*** *Implement Mitigation Measures 4.3-1 (See Impact 4.3-1 for complete text) and 4.3-2. (See Impact 4.3-3 for complete text)*	
OTHER CEQA TOPICS			
Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, Cause a Fish or	PS	***Mitigation Measures:*** *Relevant mitigation measures required to reduce this impact to a less than significant level include the following measures*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory		*from Section 4.2, "Biological Resources," and Section 4.3, "Cultural Resources," of this SEIR:* • *2008 EIR/EIS:* – *Mitigation Measure 3.5-1a* – *Mitigation Measure 3.5-1b* – *Mitigation Measure 3.5-1c* – *Mitigation Measure 3.5-1d* – *Mitigation Measure 3.5-1e* – *Mitigation Measure 3.5-1f* – *Mitigation Measure 3.5-2* – *Mitigation Measure 3.8-3* • *2019 SEIS:* – *Mitigation Measure 3.4-5* – *Mitigation Measure 3.4-6* – *Mitigation Measure 3.4-7* – *Mitigation Measure 3.4-8* – *Mitigation Measure 3.4-9* – *Mitigation Measure 3.4-10* – *Mitigation Measure 3.4-11* – *Mitigation Measure 3.4-12* – *Mitigation Measure 3.4-13* – *Mitigation Measure 3.6-1* – *Mitigation Measure 3.6-2*	
Impact 7-2: Impacts that are Individually Limited but Cumulatively Considerable	LTS	None required.	LTS
Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings	PS	***Mitigation Measures:*** *Implement the following existing and newly proposed mitigation measures:*	LTS

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Impact	Significance Before Mitigation	Mitigation Measures	Significance After Mitigation
		• *2008 EIR/EIS:* – *Mitigation Measure 3.6-1a* – *Mitigation Measure 3.6-1b* – *Mitigation Measure 3.6-1c* • *SEIR Section 4.1:* – *Mitigation Measure 4.1-1a* – *Mitigation Measure 4.1-1b*	

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CHAPTER 1: INTRODUCTION

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This draft subsequent environmental impact report (SEIR) has been prepared by Imperial County (County), the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.; California Code of Regulations [CCR] Title 14 Section 15000 et seq. [CEQA Guidelines]) pursuant to 14 CCR section 15162, to evaluate the potentially significant environmental effects associated with United States Gypsum Company's ("USG" or "the applicant") request for a Condition Use Permit (CUP) to develop Well No. 3 and an associated pipeline to support mining operations at the Plaster City Quarry (Quarry). In addition, this SEIR evaluates mining operations at the Quarry under the 2008 Quarry Expansion and restoration and preservation of two off-site properties (Viking Ranch restoration site and Old Kane Springs Road preservation site). Together these components make up the proposed project. A detailed description of the proposed project can be found in Chapter 2, "Project Description."

Under CEQA, the County must identify and consider the potentially significant environmental effects of the actions proposed before making a final decision to approve the proposed project. This SEIR will be used in the planning and decision-making process by the lead agency (the County) and other responsible and trustee agencies.

This introductory chapter provides a background and summary of the proposed project; an overview of the environmental review process required under CEQA; agency roles and responsibilities; and the organization used in this SEIR.

1.1 PURPOSE OF A SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

An EIR is an informational document that informs public agency decision makers and the public of significant environmental effects that could occur as a result of implementing a proposed project. EIRs also provide mitigation measures to reduce those environmental effects and an evaluation of alternatives to the proposed project. Development of Well No. 3 and an associated pipeline, expansion of the existing Quarry, replacement of an existing 8-inch diameter water pipeline from USG's wells in Ocotillo to the Plaster City Plant (Plant), installation of an approximately 14.4-megawatt (MW) cogeneration unit for the Plant operation, and construction of an off-specification material recycling system were part of the United States Gypsum Company Expansion/Modernization Project (USG Expansion/Modernization Project) that was evaluated in a 2006 Draft Environmental Impact Report/Environmental Impact Statement (2006 Draft EIR/EIS) and a 2008 Final EIR/EIS. Together, the two documents are referred to in this SEIR as the "2008 EIR/EIS" (Imperial County 2008). The 2008 EIR/EIS was certified by the Imperial County Board of Supervisors (Board) in 2008 (SCH No. 200121133). As such, the potential environmental impacts of Quarry expansion and reclamation and Quarry Well No. 3 development were previously evaluated in the 2008 EIR/EIS.

In addition to the 2008 EIR/EIS, analysis of the USG Expansion/Modernization Project was completed under the National Environmental Policy Act (NEPA) as part of the process of obtaining the federal approvals required for the Quarry expansion. The NEPA process resulted in the completion of a Draft Supplemental EIR (SEIS) in June 2019 and a Final SEIS in November 2019 for the USG Expansion/Modernization Project. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of waters of the United States at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-top-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 207-acre area at the Viking Ranch restoration site and the preservation of approximately 121 acres at the Old Kane Springs Road preservation site.

The County has determined that it will prepare an SEIR for the proposed project, as provided for in CEQA Guidelines Section 15162, which states:

> (a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
>
> (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or ND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
>
> (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or ND due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or;
>
> (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the ND was adopted, shows any of the following:
>
> (A) The project will have one or more significant effects not discussed in the previous EIR or ND;
>
> (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
>
> (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
>
> (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.
>
> (b) If changes to a project or its circumstances occur, or new information becomes available after adoption of a ND, the lead agency shall prepare a subsequent EIR if required under [14 CCR Section 15162(a)]. Otherwise, the lead agency shall determine whether to prepare a subsequent negative declaration or an addendum, or no further documentation.
>
> (c) A subsequent EIR or subsequent ND shall be given the same notice and public review as required under CEQA Guidelines Section 15072 or Section 15087. A subsequent EIR or ND shall state where the previous documents are available and may be reviewed.

In addition, California Public Resources Code section 21166 provides:

> When an [EIR] has been prepared for a project…, no subsequent or supplemental [EIR] shall be required by the lead agency…unless one or more of the following events occurs:

(a) Substantial changes are proposed in the project which will require major revisions of the [EIR].
(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the [EIR].
(c) New information, which was not known and could not have been known at the time the [EIR] was certified as complete, becomes available.

The County has determined that factors exist that warrant preparation of an SEIR in this case, including project changes and changes in the project's circumstances. An SEIR is not intended to recommend either approval or denial of a project. Rather, an SEIR is a document whose primary purpose is to disclose all new potential environmental impacts associated with a revised action or "project."

The SEIR process and the information it generates is used for purposes that include:

- informing governmental decision makers, agencies, and the public about potential, significant environmental effects of proposed activities;
- identifying ways that environmental damage can be avoided or significantly reduced; and
- preventing significant, avoidable damage to the environment by requiring changes to the project by using alternatives or mitigation measures if the governmental agency finds the changes to be feasible.

The purpose of this SEIR is to provide an opportunity for agency representatives and the public to review and comment on the adequacy of the SEIR before it is prepared as a final document and certified. This SEIR has been prepared by the County, acting in its capacity as lead agency, pursuant to CEQA and the CEQA Guidelines. The County has independently reviewed and analyzed this SEIR in accordance with PRC Section 21082.1(c)(1).

The mitigation measures from the 2008 EIR/EIS and the 2019 SEIS have been carried forward from the original certified environmental documents for the proposed project. In addition, new mitigation measures have been recommended to address new significant impacts. Mitigation measures to be imposed, if the project is approved, will be included in a Mitigation Monitoring and Report Program (MMRP) that documents the mitigation measures, specifies the parties responsible for implementing and funding each measure, and identifies the agency or other party responsible for monitoring, verifying, and documenting that measures have been or are being implemented. These measures may also be included in the conditions of project approval.

1.2 SUMMARY OF THE PROPOSED PROJECT

The proposed project consists of approval of a Conditional Use Permit from the County of Imperial (County) for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the United States Gypsum (USG) Plaster City Quarry (Quarry). Together, these three project components are referred to as the "project area."

Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies.

This SEIR also evaluates potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Appendix D-4). As described under the "Previous EIR/EIS" section below, USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of water of the United States at the Quarry. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this EIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies, including San Diego County which will issue a Major Grading Permit.

1.3 ENVIRONMENTAL REVIEW PROCESS

1.3.1 Scope of this Environmental Impact Report

The County prepared an initial study that included a preliminary evaluation of the potential scope of the SEIR (see Appendix A-1, "Initial Study"). The County then circulated a notice of preparation (NOP) that indicated those topic areas that would require evaluation in the SEIR (see Appendix A-2, "NOC/NOP"). Also included in Appendix A is Appendix A-3, which includes written comments received from the NOP and scoping meeting). The NOP was published on July 18, 2022, and the public comment period for commenting on the scope of the SEIR lasted through August 22, 2022. The NOP was sent to property owners within 1,000 feet of the project areas, trustee agencies, interested organizations and individuals, and the State Clearinghouse.

A public scoping session was held on August 11, 2022, at the Imperial County Planning and Development Services Department offices and virtually via the Zoom platform. Three public agency comments were received by the County during the scoping period. These comments were accounted for during preparation of the SEIR and are included as Appendix A-3.

The initial study determined that the following environmental factors would be potentially affected by the proposed project and are, therefore, addressed in this SEIR:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Tribal Cultural Resources
- Mandatory Findings of Significance

The initial study also determined that the project would not result in significant adverse impacts associated with the following resource topics and eliminated these issues from further consideration in the SEIR:

- Aesthetics
- Agricultural and Forestry Resources
- Energy
- Population and Housing
- Public Services
- Recreation

- Hazards and Hazardous Materials
- Mineral Resources
- Noise
- Transportation
- Utilities and Services Systems
- Wildfire

1.3.2 Public Review

This SEIR is available for public review and comment during the 45-day period identified on the notice of availability/notice of completion (NOA/NOC) of an SEIR accompanying this document. This SEIR and all supporting technical documents and reference documents are available for public review at the Imperial County Planning and Development Services Department located at 801 Main Street in El Centro, California 92243 and on the Imperial County website at:

http://icpds.com/planning/environmental-impact-reports/draft-eirs/

During the 45-day public comment period, written comments on the SEIR may be submitted to the Planning and Development Services Department at the following address:

Attn.: Ms. Diana Robinson, Planning Division Manager
Imperial County Planning and Development Services Department
801 Main Street
El Centro, California 92243

Written comments on the SEIR may alternately be submitted via e-mail with the subject line “USG Plaster City Quarry Expansion and Well No. 3 Project SEIR” to DianaRobinson@co.imperial.ca.us.

Oral comments on the SEIR are welcome and may be stated at a public meeting, which shall be held as indicated on the NOA/NOC.

Following the public review and comment period, the County will respond to all written and oral comments received on the environmental analysis in this SEIR. The responses and any other revisions to the SEIR will be prepared as a response-to-comments document. The SEIR and its appendices, together with the response-to-comments document, will constitute the final SEIR for the proposed project.

1.3.3 Use of the SEIR

Pursuant to CEQA, this is a public information document for use by governmental agencies and the public. The information contained in this SEIR is subject to review and consideration by the County (as the lead agency) and any other responsible agencies before the County decides to approve, reject, or modify the proposed project.

The Imperial County Planning Commission must ultimately certify that it has reviewed and considered the information in the SEIR and that the SEIR has been completed in conformity with the requirements of CEQA before making any decision on the proposed project. Certification of the SEIR does not constitute approval of the project.

1.4 DISCRETIONARY ACTIONS

It is anticipated that this SEIR will provide environmental review for all discretionary approvals and actions necessary for this project. A number of permits and approvals would be required before the proposed project could be implemented, although quarrying operations pursuant to existing entitlements are anticipated to continue throughout the environmental review process.

As lead agency for the proposed project, the County is primarily responsible for the approvals required. The primary approval being sought is a Conditional Use Permit (CUP) to allow for development of Well No. 3 and an associated pipeline. As part of any approval action for the project, the County would be required to certify the final EIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring and reporting program. In Imperial County, the County Planning Commission is the approval authority for surface mining permits and reclamation plans, which action is appealable to the County Board of Supervisors.

1.5 RESPONSIBLE AND TRUSTEE AGENCIES

Projects or actions undertaken by the lead agency (i.e., the County) may require subsequent oversight, approvals, or permits from other public agencies to be implemented. Other such agencies are referred to as "responsible agencies" and "trustee agencies." Pursuant to Sections 15381 and 15386 of the CEQA Guidelines, as amended, responsible agencies and trustee agencies are defined as follows:

- A "responsible agency" is a public agency that proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or negative declaration. For the purposes of CEQA, the term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval power over the project (Section 15381).
- A "trustee agency" is a state agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California (Section 15386).

A number of agencies may have a particular interest in the project. These agencies include those listed below:

Federal Agencies

- United States Corps of Engineers (404 Permit)

State Agencies

- California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
- Colorado River Regional Water Quality Control Board (401 Certification)

Regional and Local Agencies

- County of San Diego (Major Grading Permit)
- Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)

The following public agency approvals have already been obtained:

- U.S. Bureau of Land Management (Right-of-Way Grants [Case file numbers CACA-056908 and CACA-044014], 2003 Plan of Operations Revised April 2018)
- U.S. Fish and Wildlife Service (Biological Opinion FWS-ERIV-11B0345-19F1352)

1.6 REPORT ORGANIZATION

This SEIR is organized into the following chapters and sections:

Executive Summary

This chapter provides a summary of the project and a summary of new significant environmental impacts not covered in the original EIR that would result from implementation of the proposed project, and describes new conditions of approval and mitigation measures, also not covered in the original EIR, recommended to avoid or reduce significant impacts.

Chapter 1, "Introduction"

This chapter discusses the overall SEIR purpose; provides a summary of the proposed project; describes the SEIR scope; and summarizes the organization of the SEIR.

Chapter 2, "Project Description"

This chapter provides a description of the project's objectives, the project site and context, and a detailed description of the proposed project and its required local (County) approval process.

Chapter 3, "Terminology, Approach, and Assumptions"

This chapter describes key terminology, approaches, and assumptions used in the SEIR analysis, including definitions of existing conditions versus baseline conditions, descriptions of the increment of net new changes at the site attributable to the project, and assumptions regarding other cumulative development and approaches used to define cumulative scenarios.

Chapter 4, "Environmental Analysis"

This chapter provides the environmental setting, impacts, and required mitigation measures for the project organized by issue area corresponding to topics in the CEQA Environmental Checklist (CEQA Guidelines Appendix G, as amended). Sections 4.1 through 4.8 address the environmental topics of this SEIR: aesthetics, air quality, biological resources, climate change and greenhouse gas emissions, geology and soils, hydrology and water quality, land use and planning, and noise, respectively.

Each resource section follows the same format and includes the following primary subsections:

- The **"Environmental Setting"** subsections provide an overview of the existing physical environmental conditions at the time this analysis was prepared, which establishes a baseline used during analysis of potential impacts created by the project. When relevant to the analysis, the "Environmental Setting" subsection also provides predicted future environmental conditions under circumstances without the project to provide a benchmark for the impact analysis of future conditions with the project.

- The **“Regulatory Setting”** subsections identify the plans, policies, laws, regulations, and ordinances that are relevant to each resource subject. This subsection describes required permits and other approvals necessary to implement the project.
- The **“Impact Analysis Methodology”** subsections provide criteria that define when an impact would be considered significant. Criteria are based on CEQA Guidelines, scientific and factual data, views of the public in affected area(s), the policy/regulatory environment of affected jurisdictions, or other factors.
- The **“Impacts and Mitigation Measures”** subsections provide an assessment of the potential impacts of the project and specify why impacts are found to be either significant and unavoidable, significant, or potentially significant but mitigable, less than significant, or why no environmental impact would result. Feasible mitigation measures to avoid or reduce the severity of identified impacts follow the impact discussions. Where feasible mitigation cannot reduce impacts to a less-than-significant level, the impacts are identified as significant and unavoidable. The analysis of cumulative impacts is provided in Chapter 5, “Cumulative Impacts.”

Chapter 5, “Cumulative Impacts”

This section provides an evaluation of the cumulative impacts, which is based on the past, present, and reasonably foreseeable conditions, together with the effects of the project.

Chapter 6, “Alternatives”

This section provides a comparative evaluation of alternatives to the proposed project. The alternatives include:

- No Project—Reclamation of Existing Conditions Alternative,
- Prohibited Nighttime Reclamation Alternative,
- Revised ADV Construction Phasing Alternative, and
- Reduced Capacity of Lake A Diversion Structure Alternative.

Chapter 7, “Other CEQA Topics”

This section provides the required analysis of growth-inducing impacts; significant irreversible changes; effects found not to be significant; and significant unavoidable impacts.

Chapter 8, “List of Preparers”

This section identifies the preparers of the SEIR and the persons and organizations contacted.

Chapter 9, “References and Resources”

This section identifies the references and resources cited within the text of this SEIR.

Chapter 10, “Acronyms”

This section provides an alphabetical list of the acronyms and initialisms used throughout the SEIR.

Appendices

The appendices contain the initial study, the NOC and NOP, written comments submitted on the NOP, and technical studies and reports used to prepare the SEIR.

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CHAPTER 2:
PROJECT DESCRIPTION

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CHAPTER 2: PROJECT DESCRIPTION

2.1 INTRODUCTION

United States Gypsum (USG) Plaster City Quarry (Quarry) holdings consist of 2,048 acres located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line (see Figure 2-1, "Regional Location" and Figure 2-2a, "Site Location—Quarry, Well No. 3, and Pipeline"). USG has continuously owned and operated the Quarry and associated wallboard manufacturing plant (Plant) since 1945. This section provides a detailed description of the proposed project, which includes development of Well No. 3 and associated pipeline, operations under the 2008 Quarry expansion, and restoration and preservation of two off-site properties (Viking Ranch restoration site and Old Kane Springs Road preservation site) (see Figures 2-2b and 2-2c, respectively).

2.2 PROJECT BACKGROUND

A water well for Quarry operations was permitted in 1983 under CUP No. 635-83 for a maximum withdrawal of 7,000 gallons per day (Quarry Well No. 1). The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Consequently, the Quarry has historically received potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant.

Production from Quarry Well No. 1 declined due to incrustation and became unusable. Therefore, a second well (Quarry Well No. 2) was drilled in 1993 to replace the original well pursuant to CUP No. 635-83, which was re-issued for a new well. However, water production from Quarry Well No. 2 declined steadily over time.

Currently, Quarry Well No. 2 produces approximately 4,800 to 5,000 gallons per day (gpd), which is insufficient to meet USG's current need for approximately 15,000 gpd for dust control for Quarry operations. Therefore, USG proposes to replace existing Quarry Well No. 2 with planned Well No. 3 on USG-owned land located approximately 3 miles northeast of the Quarry. Quarry Well No. 3 would also replace an existing test well that was installed in 2001 at the proposed location of Quarry Well No. 3.

As described in Chapter 1, "Introduction," proposed Quarry Well No. 3 is part of a larger project involving the expansion and modernization of USG's Plant and Quarry (Quarry Expansion), that was evaluated in the 2008 EIR/EIS, which was certified by the Imperial County Board of Supervisors (Board) on March 18, 2008. As such, the potential environmental impacts of proposed Quarry Well No. 3 were previously evaluated in the 2008 EIR/EIS.

On March 18, 2008, the Board approved a Conditional Use Permit for Quarry Well No. 3 in Case No. CUP-08-0003, recorded document 2008-018433. However, USG did not initiate or obtain construction permits for Well No. 3 within the period set forth in Imperial Land Use Ordinance Section 90203.13. Therefore, CUP-08-0003 has expired.

Settlement Agreement

Water at the Plant is delivered by pipeline from three wells owned by USG within an area located approximately 8 miles west of Plaster City near or adjacent to the community of Ocotillo. The USG wells pump from the same basin as other users. The 2008 EIR/EIS included Mitigation Measures 3.3-1 and 3.3-2 to address the potential impacts of additional pumping due to proposed Plant operations on other groundwater wells in the Coyote Wells Groundwater Basin. The Sierra Club filed a Motion of Supplemental Writ in 2008 that challenged the adequacy of the EIR and sought an order restricting USG's ability to pump groundwater in the Basin.

On December 16, 2013, the Court of Appeal reversed a prior Superior Court order, holding that there was insufficient evidence to support the county conclusion that the Mitigation Measures for the project, as adopted in January 2008, would be viable or effective in reducing the project's potential impacts on individual groundwater wells to a level of insignificance. As a result, in October 2018, the Sierra Club, Imperial County and the Imperial County Planning Commission, and USG (referred to collectively as the "Parties") entered into settlement negotiations. The settlement agreement dated November 13, 2018 and revised and augmented by the Notice of Entry of Order Regarding Discharge of the Writ and Satisfied Order on Remittitur dated August 5, 2019 (Settlement Agreement), replaces Mitigation Measures 3.3-1 and 3.3-2 adopted in the 2008 EIR/EIS with new mitigation measures (Mitigation Measures 3.3-1-A through 3.3-1-G). The measures are intended to ensure that project impacts on individual groundwater wells within the Coyote Wells Groundwater Basin are less than significant. The project area analyzed in this SEIR is not located within the Coyote Wells Groundwater Basin, and therefore this Settlement Agreement does not pertain to the proposed project.

Mitigation Sites

In addition to the 2008 EIR/EIS, additional analysis of the USG Expansion/Modernization Project was completed under NEPA as part of the process of obtaining the federal approvals required for the Quarry expansion. The NEPA process resulted in the completion of a Draft Supplemental EIS (SEIS) in June 2019 and a Final SEIS in November 2019 for the USG Expansion/Modernization Project. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of water of the United States at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 206-acre area at the Viking Ranch restoration site (see Figure 2-2b) and the preservation of approximately 121-acres at the Old Kane Springs Road preservation site (see Figure 2-2c).

2.3 PROJECT PURPOSE

The proposed Well No. 3 and associated pipeline were approved under an existing County Conditional Use permit (CUP) CUP-08-0003, "US Gypsum water well for Quarry Expansion Project, Assessor's Parcel Number APN 033-020-009," which was approved by the Board on March 18, 2008. However, USG did not initiate or obtain construction permits for Quarry Well No. 3 within the time period set forth in Imperial County Land Use Ordinance Section 90203.13. Therefore, CUP-08-0003 has expired.

The location and characteristics of the proposed Quarry Well No. 3 and associated pipeline have not changed since the USG Expansion/Modernization Project was approved in 2008 and remain as described in the original application for CUP-08-0003 and in the associated 2008 EIR/EIS. The proposed well and associated facilities request has not changed since approval in 2008. Therefore, the CUP requested under the proposed project would essentially replace CUP-08-0003.

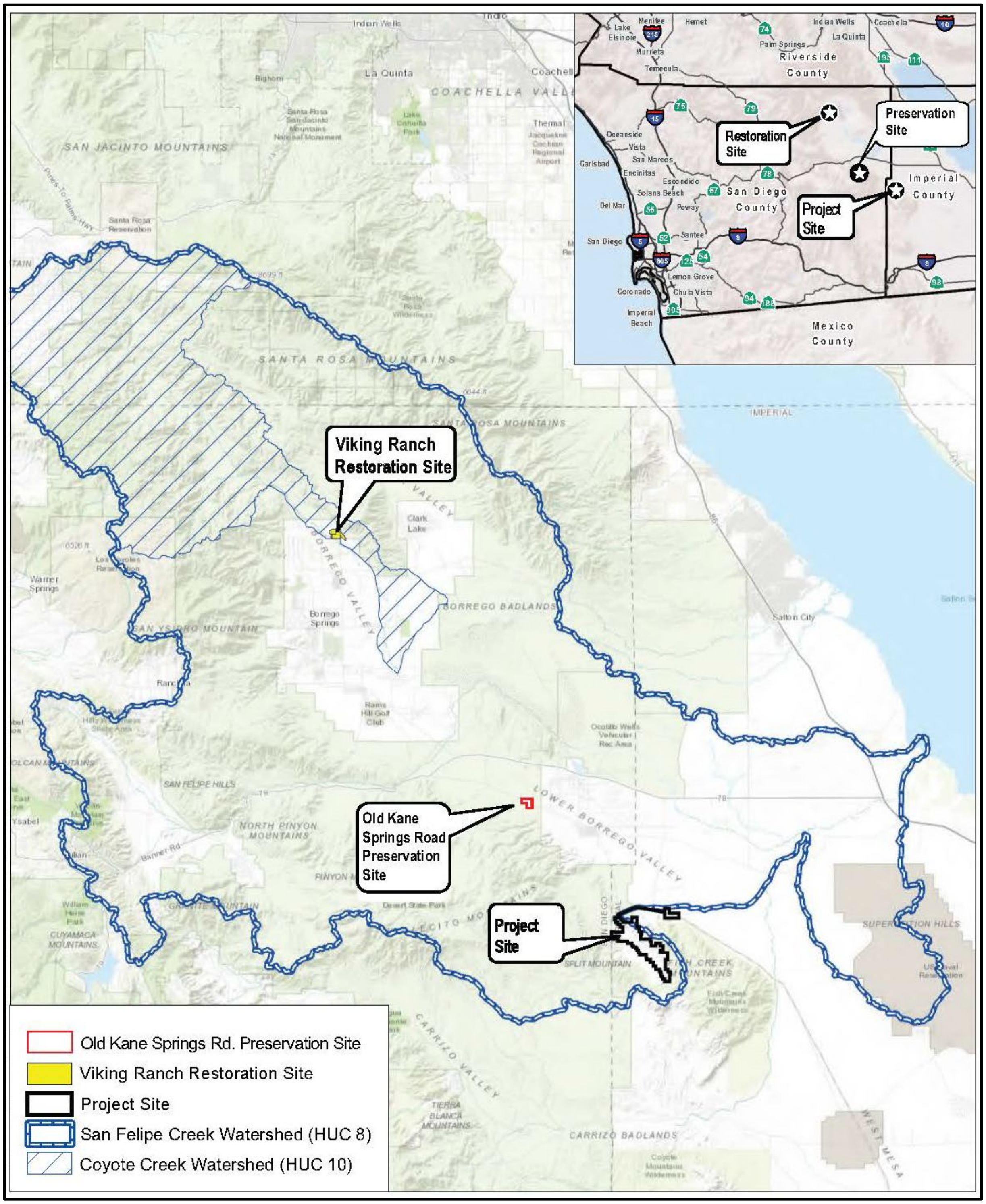

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Figure 2-1
Regional Location

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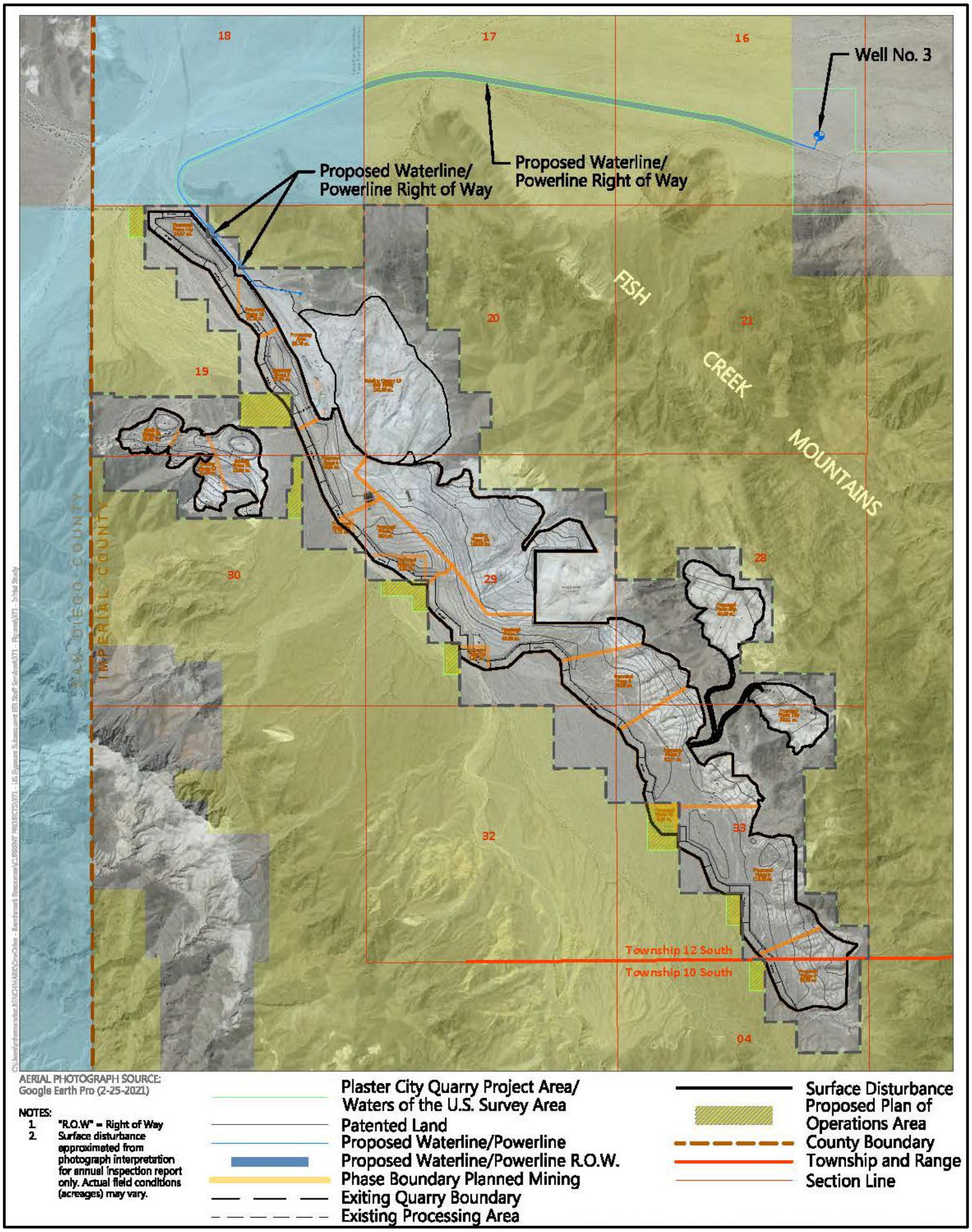

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Figure 2-2a
Site Location—Quarry, Well No. 3, and Pipeline

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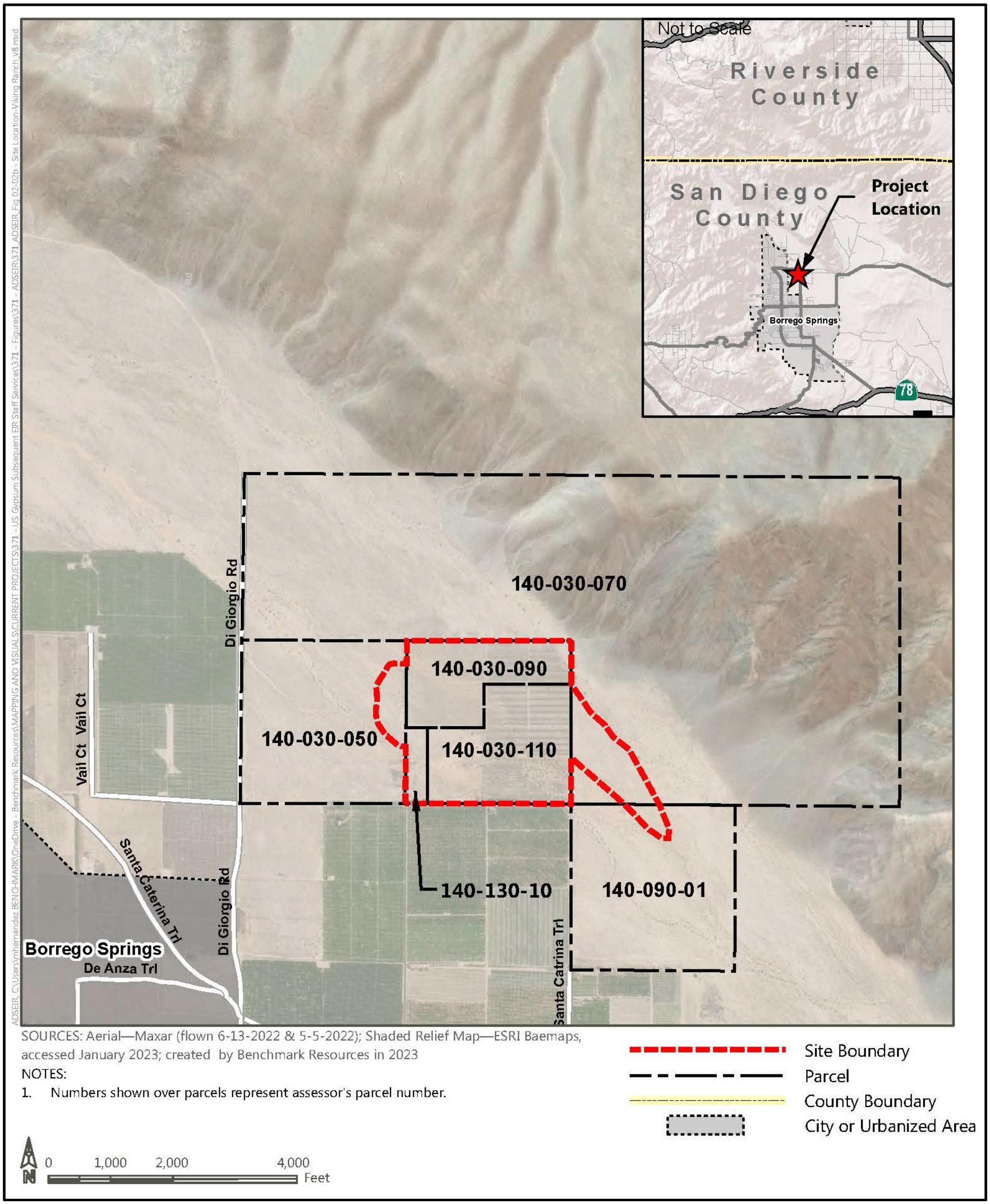

SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

SOURCE: Benchmark Resources, 2023
NOTE: Image is not printed to scale.

Figure 2-2b
Site Location—Viking Ranch Restoration Site

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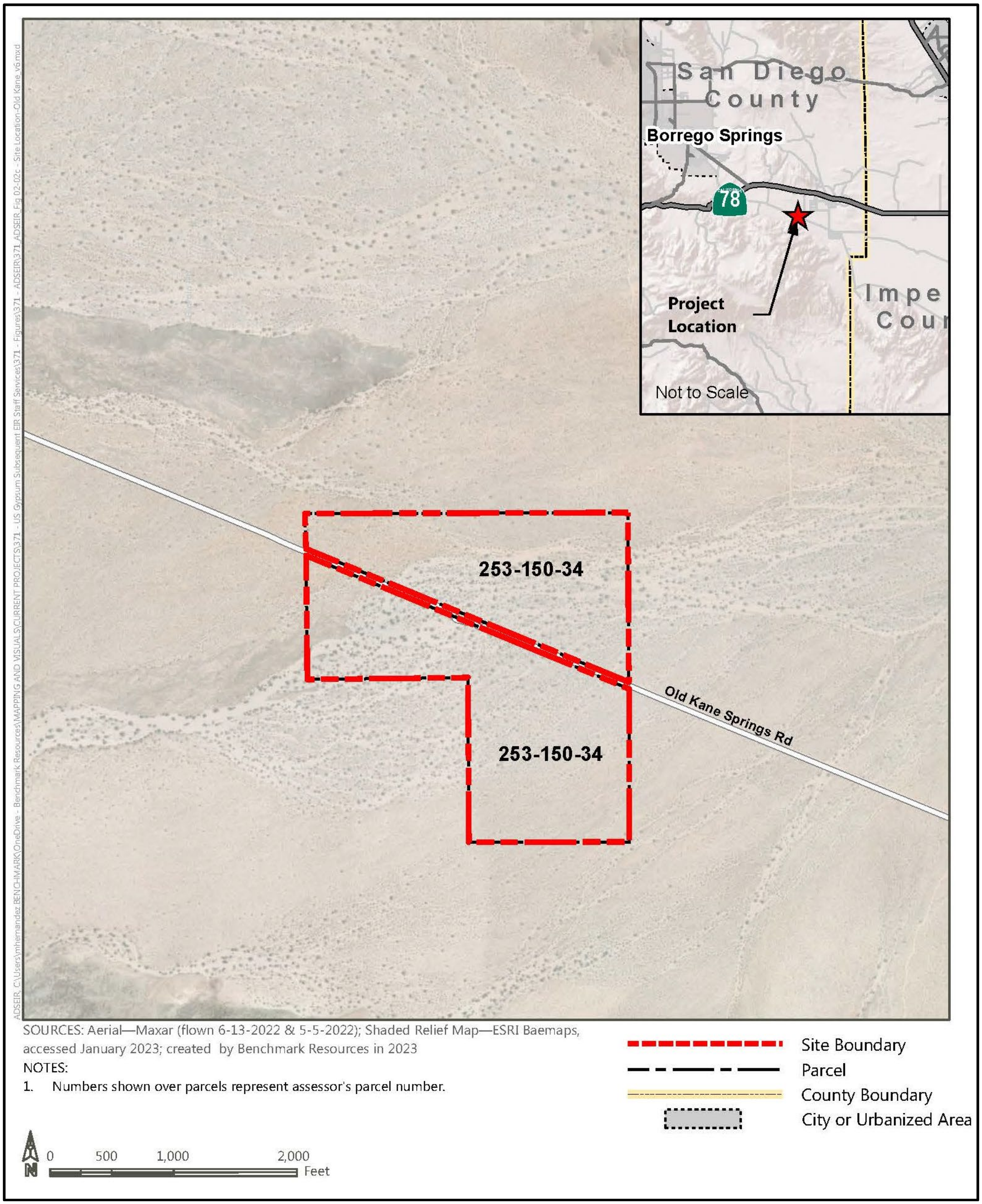

SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

SOURCE: Benchmark Resources, 2023
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Figure 2-2c
Site Location—Old Kane Springs Road Preservation Site

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Although no entitlements are required from Imperial County for the Quarry expansion and Viking Ranch restoration or preservation off the Old Kane Springs Road preservation site, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion and with the associated restoration and preservation actions, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

2.4 PROJECT OBJECTIVES

The proposed project includes the following objectives:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;
2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
3) Meet market demands for gypsum products;
4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
5) Concurrently reclaim Quarry site for post-mining uses as Open Space;
6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter Cologne Act.

2.5 ENVIRONMENTAL SETTING

2.5.1 Project Location and Access

The USG Plaster City Quarry holdings consists of 2,048 acres and is in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line (see Figure 2-1 and Figure 2-2a). Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor’s Parcel Number [APN] 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site (see Figure 2-2b) is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-030-01-00, -05-00, -07-00, -09-00, -10-00, and -11-00). The 121-acre Old Kane Springs Road preservation site (see Figure 2-2c) is located 7 miles northwest of the USG Quarry in San Diego County (APN 253-150-34-00).

The Quarry, well site, and pipeline alignment are accessed via West Evan Hewes Highway. Viking Ranch is accessed on an unpaved easement that proceeds east from the northern extension of De Gregorio Road in Borrego Springs, California. The Old Kane Springs Road preservation site is accessed via the unpaved Old Kane Springs Road off Highway 78 or Split Mountain Road in Ocotillo Wells, California.

2.5.2 Assessor Parcel Numbers

The project site's assessor parcels are listed in Table 2-1, "Assessor's Parcel Numbers."

Table 2-1
Assessor's Parcel Numbers

Assessor's Parcel Numbers	Ownership	Acres (Approximate)[1]	Zoning
IMPERIAL COUNTY			
	Well No. 3 Site		
033-020-009	USG	159.9	S-2
	Pipeline Alignment		
033-010-016	State	17.0	STATE
033-010-017	BLM	12.6	BLM
033-010-025	BLM	18.1	BLM
033-060-008	USG	388.6	S-2
033-060-010	USG	80.3	S-2
033-060-012	BLM	1.2	BLM
	USG Plaster City Quarry		
033-060-009	USG	40.0	S-2
033-070-010	USG	80.0	S-2
033-070-004	USG	37.2	S-2
033-070-005	USG	159.0	S-2
033-070-008	USG	69.0	S-2
033-070-010	USG	80.0	S-2
033-070-011	USG	108.7	S-2
033-070-017	USG	32.6	S-2
033-070-023	USG	11.4	S-2
033-080-005	USG	37.9	BLM
033-090-011	USG	10.4	S-2
033-090-012	USG	70.0	S-2
033-090-013	USG	37.6	BLM
033-090-014	USG	42.2	BLM
033-090-015	USG	122.0	BLM/S-2
	Subtotal	**2,048**	
SAN DIEGO COUNTY			
	Viking Ranch Restoration Site		
140-030-01-00		4.8	
140-030-05-00	Anza-Borrego Foundation	12.3	8
140-030-07-00	State Park	26.5	n/a[3]
140-030-09-00	Borrego Water District	62.5	n/a[3]
140-030-10-00	Private	9.8	8
140-030-11-00	Borrego Water District	87.5	n/a[3]
	Subtotal	**207[2]**	
	Old Kane Springs Road Preservation Site		
253-150-34-00	Private	121	8
	TOTAL:	2,376	

Source: Imperial County 2022b
Notes: 1—Portion of parcel within project area; 2—does not add due to independent rounding; 3—parcels are federal land and not subject to County zoning

2.5.3 Existing Land Uses and Conditions

The site of Well No. 3 and associated pipelines, the quarry area (impact area), Viking Ranch restoration site, and Old Kane Springs Road preservation site are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea level. This area is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley. The Quarry and project alignment are located in an undeveloped area at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and along the southeast segment of the Fish Creek Wash. A portion of the northwest segment of the proposed pipeline alignment would cross Anza-Borrego Desert State Park.

The Quarry facilities, narrow-gauge railroad, and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the proposed project. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3.

The Viking Ranch restoration site was primarily former agricultural land located within the Coyote Creek Wash (see Figure 2-3, "Viking Ranch Restoration Site"). However, parcel 140-030-10-00 and the southeastern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The Viking Ranch restoration site is bordered to the west, north, and east by the Anza-Borrego Desert State Park and to the south by privately-owned orchards. It is located at the base of Coyote Mountain, which is part of the Sana Rosa Mountain Range. The nearest sensitive receptor is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

The Old Kane Springs Road preservation site is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles (see Figure 2-4, "Old Kane Springs Road Preservation Site"). It contains Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. It is surrounded by undeveloped desert lands, some of which are privately owned, but the predominate ownership in the area is Anza-Borrego Desert State Park.

2.5.4 General Plan Land Use Designations

The Quarry (including the expansion area), Well No. 3, and approximately 2.5 miles of the pipeline alignment are in an area designated as Recreation/Open Space, the remaining 1 mile of the pipeline alignment is in areas designated by the Imperial County General Plan as Government/Special Public (Imperial County 1993); this segment is part of the Anza-Borrego Desert State Park.

The San Diego County General Plan designates the Viking Ranch restoration site as Semi-Rural Residential (SR-4) and the Old Kane Springs Road preservation site as Rural Lanes (RL-30) (San Diego County 2011). The restoration of the Viking Ranch site to more natural conditions and preservation of the Old Kane Springs Road preservation site would not conflict with these designations.

2.5.5 Zoning Classifications

As the local land use authority, the County authorizes mining activities on unincorporated lands through the issuance of surface mining permits and approval of reclamation plans pursuant to County Code of Ordinances Title 9, Land Use Code, Division 20, Surface Mining and Reclamation. The provisions of the County Surface Mining and Reclamation ordinance apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted within any County zoning designation upon approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation.

The Quarry parcels (including the expansion area) are zoned either S-2 (Open Space/Preservation) or BLM (see Table 2-1). The proposed site of Well No. 3 is primarily zoned S-2 (Open Space/Preservation), with one parcel zoned STATE (APN 033-010-016). The S-2 Zone is the County's Open Space Preservation Zone. The primary intent of this zoning designation is to preserve the significant cultural, biological, and open space areas of the county. Permitted uses in the S-2 zone include agriculture and accessory uses, mineral extraction, pasturing and grazing, solar energy generation, public buildings, and storage. Additional industrial, manufacturing, commercial, energy, and recreational uses are allowed with the issuance of a CUP. The minimum lot size in the S-2 zone is 20 acres and the maximum height limit is 40 feet. The BLM and STATE zoning designations indicate parcels which are owned by the federal and State governments and not subject to County zoning requirements (Imperial County 2022).

The Quarry and Well No. 3 and the associated pipeline are associated with surface mining operations and are consistent with the Recreation/Open Space designation of the Imperial County General Plan (Imperial County 2015). Title 9, Land Use Ordinance, requires approval of a CUP to allow surface mining operations on lands zoned S-2.

The Viking Ranch restoration site and Old Kane Springs Road preservation site are in San Diego County and are not subject to Imperial County zoning requirements. Both properties are zoned by San Diego County as S92 (General Rural). This zoning designation is intended to provide approximate controls for land, which is rugged terrain, watershed, dependent on ground water for a water supply, desert, susceptible to fire and erosion, or subject to other environmental constraints (County of San Diego 2022).

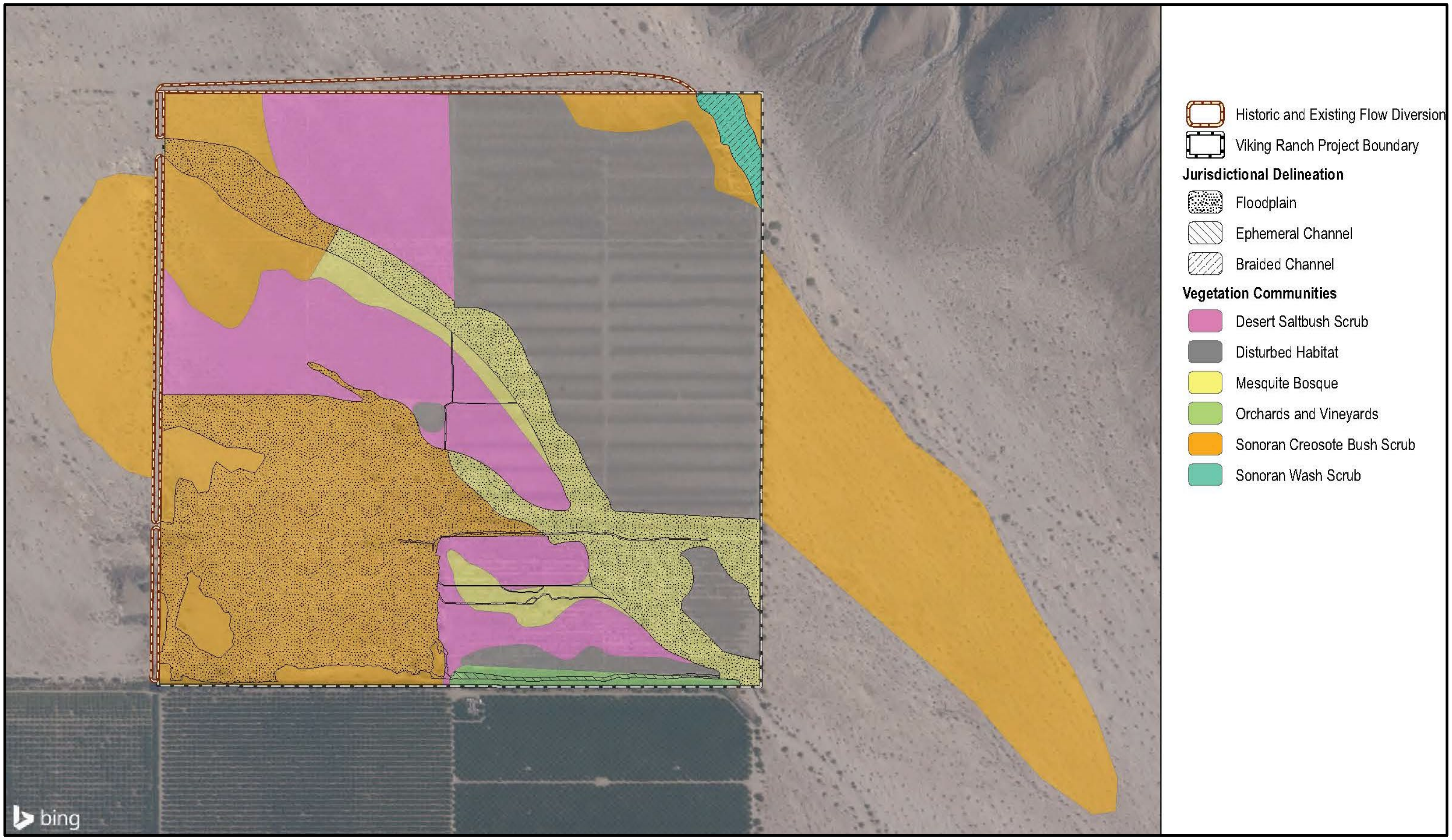
2.5.6 Mineral Resource Designations

An objective of SMARA is to create a mineral lands inventory by designating certain areas of California as being important for the production and conservation of existing and future supplies of mineral resources. Pursuant to Section 2790 of SMARA, the State Mining and Geology Board has designated certain mineral resource areas to be of regional significance.

The project area and the Viking Ranch restoration site and Old Kane Springs Road preservation site are in areas that have not yet been mapped as part of a Mineral Land Classification study (DOC 2022).

The Fish Creek Mountains gypsum deposit constitutes the largest reserves of this commodity in California. More than 31.2 million tons of gypsum has come from this deposit; of that, 30.1 million tons have been extracted by USG since 1945. This is the sole active gypsum quarry in the county, and the largest gypsum quarry in the United States (Imperial County 2006).

No locally important mineral resources are identified at either the Viking Ranch restoration site or the Old Kane Springs Road preservation site (San Diego County 2011).



SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2018
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Figure 2-3
Viking Ranch Restoration Site

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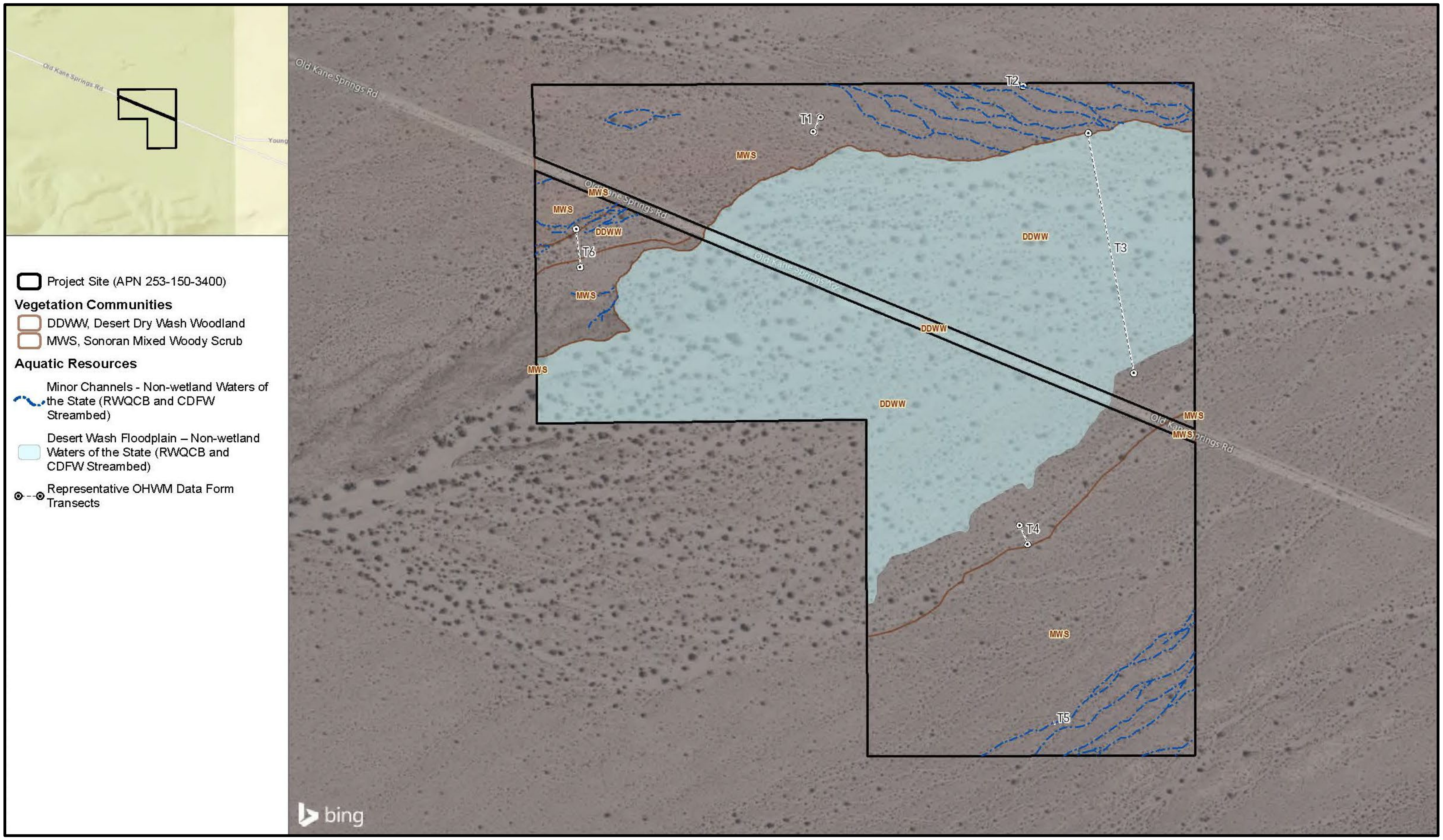

SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2020
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Figure 2-4
Old Kane Springs Road Preservation Site

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2.5.7 Utilities

The site of proposed Well No. 3 and associated pipeline alignment are not currently served by any utilities. In conjunction with the development of the proposed pipeline, the project applicant would install an electric supply to serve the well. The electric supply would be installed alongside the existing alignment of the narrow-gauge railroad. No other utilities would be required to serve the proposed well or pipeline.

Water for dust suppression is currently provided to the Quarry by three existing wells located near Ocotillo. The Quarry is currently provided electricity by the onsite 14.4-megawatt (MW) cogeneration unit.

The Viking Ranch restoration site and Old Kane Springs Road preservation site are not currently served by any utilities and no utilities are proposed for installation at either site.

2.5.8 Equipment

Both construction of the proposed well and pipeline and restoration of the Viking Ranch restoration site would be expected to require the use of backhoes, a trencher, grader, dozer, and dump truck, as well as supply and water trucks.

2.6 PROPOSED PROJECT ELEMENTS

Plaster City Quarry Expansion

The Quarry expansion component of the USG Expansion/Modernization Project consists of the following:

- Improvements already made to the crushing and loading facilities (i.e., development of a new crusher building and extension to the existing rock storage building to allow additional hopper cards to be loaded).
- Adoption of a long-term mining and reclamation plan for the extent of USG's mineral holdings.

Overview of Quarry Operation and Production

The quarry operations are designed to quarry, crush, screen, and ship material via narrow-gauge rail to the Plant for finish processing and via truck for agricultural and Portland cement manufacturing uses. The existing Quarry processing facility would not be expanded beyond the existing improvements already made. Haul road alignments would be changed to accommodate individual quarrying in various areas, and the rail facility and access road would be maintained. Quarry access would regularly change as the individual quarries expand. All service and haul roads would be retained within the Quarry footprint. Equipment parking and storage areas at the Quarry would be on absorbent pads over a plastic membrane to keep fluids from passing through it to the soil below. Access roads outside the mining footprint, but within the Quarry boundary, would be maintained in place once established as identified in the Reclamation Plan.

Proposed Quarry operations are approved to produce up to 1.92 million tons of gypsum per year. At this rate of production, the number of train trips between the Quarry and the Plant could reach about 1,800 round trips per year.

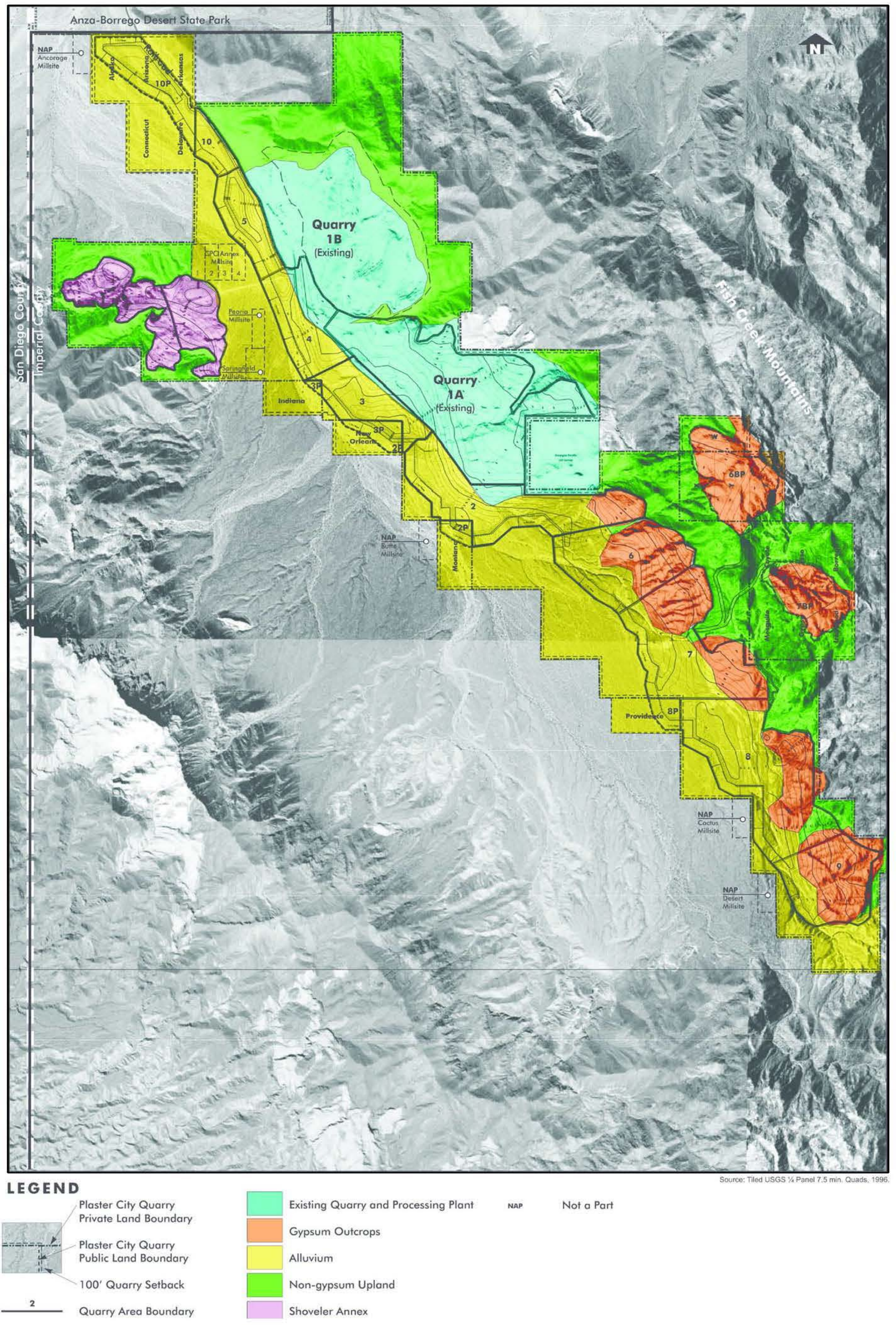
Summary of Approved 2003 Mine Reclamation Plan

On March 18, 2008, the Board approved a Mine Reclamation Plan (2003) for the U.S. Gypsum Mining & Quarry expansion project pursuant to Case No. CUP-08-0003, recorded document 2008-018432. The 2003 Mine Reclamation Plan consists of a multi-phased plan that would systematically quarry and process up to the rate authorized in USG's current air quality permit, approximately 1.92 million tons of gypsum annually. The Mine Reclamation Plan is divided into phases based on current geological data, quantity and quality of gypsum, market demand and proximity to the existing Plant. Each phase has been numbered for purposes of identification. Figure 2-5, "Plaster City Quarry Plan." shows the proposed phasing. At maximum production rates, the known reserves would provide in excess of 80 years of production.

Two types of quarrying are proposed: outcrop quarrying and alluvial wash quarrying. The two methods of quarrying are described below.

> *Outcrop Quarrying*: The areas of current production are designated as Quarry 1A and Shoveler. These areas consist of outcrops of gypsum above the level of the alluvial wash. Under the proposed project, production would continue with the extension and development of benches with a height of 25 feet. The final configuration of the benches would be based upon: (1) the contact with underlying low-purity gypsum, anhydrite, arkose, or granite; and (2) the up-dip limit of the outcrops. Quarry development would progress to each of the additional phases beginning with Phase 2, then proceeding both north and south into adjacent phases based on proximity and gypsum quality. As previously indicated, overburden on these outcrops is almost nonexistent. When surface clays are encountered, they would be removed for use in reclaiming previously mined outcrops.
>
> *Alluvial Wash Quarrying*: Under the USG Modification/Expansion Project, quarrying would extend north to south. Quarrying of the alluvial wash deposits would progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the gypsum would progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached. The depth of each Quarry phase would vary based on the bottom limit of gypsum.

An earthen berm would be constructed along the west side of the Quarry to divert natural surface water flows toward Fish Creek Wash and away from the Quarry operations. The design was based on a hydrology study and drainage analysis (Joseph E. Bonadiman & Associates Inc. 2004, cited in Dudek 2018). The berm would be constructed of overburden material from various gypsum mining phases, or portions of phases, in the alluvial wash stripped to expose the gypsum. As overburden is stripped, a portion would be pushed to the east bank of the wash and the furthest southern limits of the planned disturbance to form the berm. Another berm consisting of the top 1 foot of surface alluvium would be pushed over the west Quarry slopes and used as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time but would typically be pushed into the adjoining mined out areas for reclamation of the slopes such that overburden from Phase 3 would be used in Phase 2, overburden from Phase 4 would be used in Phase 3, and so forth. At end of the quarry life, all berms will have been used for Reclamation.



Source: Tiled USGS ¼ Panel 7.5 min. Quads, 1996.

SOURCE: Resource Design Technology, Inc., 2006; Modified by Benchmark Resources, 2022
NOTE: Image is not printed to scale.

Figure 2-5
Plaster City Quarry Plan

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Quarry Reclamation Techniques

Where feasible, reclamation would occur concurrently during mining operations. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. The steepest portion of the hillside quarries would be sloped no steeper than 1H:1V slopes and about 100 feet high. The site access on the north would remain gated. The privately held lands would not be open to public recreational use. The benched hillsides would be recontoured by blasting or dozing the benches to soften the topography.

Once quarrying operations are terminated, equipment and structures would be removed; their foundations would be reduced below grade and covered in place. It is likely that an office or trailer would remain on site for ongoing revegetation monitoring, and for security purposes. The access road would be maintained for access to the main process area site and specific haul roads would be maintained to access reclamation activity and monitoring. Those portions of the rail line at natural surface elevation would remain in place. The length of rail proceeding below original ground line under the rock storage building will be removed and the spur cut backfilled. Ultimately all equipment, power poles, and buildings would be removed, road access would be restricted by gates, warning signs would be posted, and access to Quarry benches would be blocked by berms and/or boulders.

Revegetation

Revegetation of the mined areas occurs as described in the approved 2003 Mine Reclamation Plan. The Revegetation Plan element of the Reclamation Plan focuses on preparing the surface of the mined area and providing native seeds to take advantage of the infrequent rains.

Revegetation efforts are fully described in the Mine Reclamation Plan and would be varied over the life of the operation. The revegetation techniques are proposed as guidelines that would be followed until new information or techniques become available, which could improve the results of the revegetation activities. Revegetation efforts would use seeds and plants of native species collected locally (on-site and on adjacent areas). The undisturbed portions of the Quarry and areas adjacent to the Quarry provide the targets for achievement through the revegetation effort. The areas to be disturbed by future mining would also provide specimens for direct transplanting of native species, and the undisturbed areas would provide a source of seeds for the revegetation effort.

Changes to Mine Reclamation Plan

Since the USG Expansion/Modernization Project was approved in 2008, no changes to the Quarry Mine Plan as proposed in the Mine Reclamation Plan (March 2003) have occurred. However, minor changes have occurred to the Plan of Operations due to a reduction in the amount of public land at the Quarry. The Plan of Operations is subject to federal review by BLM and not County review, and, as such, is not described further in this Initial Study.

Under the current Quarry expansion, the limits of disturbance identified in the 2003 Mine Reclamation Plan have not changed; however, due to changes in land ownership and adjustments to the private land boundary resulting from updated and more precise mapping, the portion of the Mine Plan consisting of public lands has been reduced from 408 acres in 2003 to the present 73.2 acres. Of the 73.2 acres, 1.1 acres in the Annex Mill Site #1 have been disturbed by development of the access road; continued development of the Quarry is anticipated to disturb approximately 9.8 additional acres of public lands. Approximately 1,118.7 acres of USG privately-owned land is currently disturbed or would be disturbed under the 2003 Mine Plan. For a total disturbance area of approximately 1,129.6 acres on both private and public land.

Well No. 3 and Associated Pipeline

Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (APN 033-020-009) and would provide processing water via a 10-inch-diameter, approximately 3.5-mile-long underground pipeline that would be developed within the existing USG narrow-gauge railroad right-of-way (ROW CACA 56908). The pipeline would extend from Well No. 3 to the existing offload facility within the Quarry processing area. In conjunction with the development of the pipeline, USG would install an electric supply line to serve the well pump, The power service line would be installed underground from the well head to the Quarry gate; power poles would be installed within the Quarry site. In this document, where reference is made to this pipeline, the electrical line is understood to be included even if not specifically mentioned. The locations of the proposed Well No. 3 and pipeline are shown on Figure 2-2.

Well No. 3

Approximately 26 AF/yr are needed to support Quarry operations. Originally, a water well for Quarry operations was permitted in 1983 under CUP 635-83 for a maximum withdrawal of 7,000 gallons per day (gpd) (Well No. 1). The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Consequently, the Quarry has historically received, and continues to receive, potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant.

Production from Well No. 1 declined steadily over time due to the limited presence of groundwater in the penetrated aquifer and severe scale buildup in the well casing due to high Total Dissolved Solids (TDS) levels. Therefore, a second well (Well No. 2) was drilled in 1993 to replace the original well pursuant to CUP 635-83, which was re-issued for the new well. However, water production from Well No. 2 also declined steadily over time. Quarry Well No. 2 has been rehabilitated without a significant improvement in water production. Currently, Quarry Well No. 2 produces between approximately 4,000 and 4,800 gallons per day (gpd), which is insufficient to meet USG's current need for approximately 15,000 gpd for Quarry operations.

In 2001, USG drilled a test hole approximately three miles east-northeast of the Quarry on company-owned land along the USG railroad right-of-way. Pumping tests indicate that a production rate of 25 gallons per minute (gpm) to 50 gpm may be sustainable at the test hole location. USG is proposing to install Quarry Water Well No. 3 within one-half mile of the successful test hole.

For comparison purposes, the current permit limit of 7,000 gallons per day is approximately equivalent to 7.8 AF/yr, or 4.9 gpm assuming that the pump is operated continuously. The needed 26 AF/yr is approximately equivalent to 16.1 gpm assuming that the pump is operated continuously. Thus, based on the pumping test results, a production well developed in the vicinity of the test well would be able to sustain an adequate production rate. The proposed project would result in an increase in the rate of groundwater extraction of approximately 18.2 AF/yr.

The proposed Quarry Well No. 3 site represents approximately 1/8-acre on USG property. Well. No. 3 would provide a reliable water supply capable of producing approximately 23,000 gallons per day (or 26 acre-feet per year [AF/yr]). The well would be approximately 6 inches in diameter and 565 feet in depth.

Final well design and pipeline criteria are being engineered. The water would be used in the Quarry for dust suppression on the haul roads and crushing equipment, for the watering of transplanted desert plant species during reclamation, and as a possible supply of potable water for use by employees.

Pipeline

The proposed pipeline would be constructed of high-density polyethylene pipe (HDPE) and would be installed at a depth of about 4 feet below the ground surface. The pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. A trench, approximately five feet wide and seven feet deep would be excavated between the railroad and access road for installation of the pipeline. Excavated soils would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Construction would occur within a 30-foot-wide area along the entire length of the pipeline alignment. Therefore, development of the pipeline would disturb approximately 12.7 acres (30 foot wide by 3.5 miles) of land, most of which is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. All waterline/powerline construction areas would be restored to pre-project conditions following the completion of construction activities.

Viking Ranch Restoration

The Viking Ranch parcels were primarily former orchard land located north of Borrego Springs and within the Coyote Creek Wash (see Figure 2-1). However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The mitigation site is located approximately 26 miles from the USG Quarry. Viking Ranch was used for orchard production until the site was purchased by the Borrego Water District in 2017. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The restoration program will remove these diversion features to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain. The restoration program is described in the Draft Habitat Mitigation and Monitoring Plan for the United States Gypsum Company Plaster City Expansion/Modernization Project (HMMP) (see Appendix D-4).

Baseline Conditions

The HMMP documents existing conditions on the restoration site. A site reconnaissance of the Viking Ranch restoration site was conducted on June 1, 2018, by Hugh McManus of Dudek. No residence or other habitable structures were observed on the site. Evidence of past agricultural activity was observed in the form of irrigation lines and remnants of chipped trees in windrows. Additional notable observations include a decommissioned water well, a power distribution board, electrical power hook ups, debris, containers storing oil, and a weather station maintained and operated by University of California Irvine.

A jurisdictional delineation was completed for the restoration site that identified floodplain areas, ephemeral channels, and braided channels on the site, as shown on Figure 2-3. A total of 53.12 acres of jurisdictional waters were identified on the restoration site.

A Preliminary Environmental Site Assessment Report (ESA) (Dudek 2018, cited in Dudek 2022) was conducted on the site that included the collection of 10 soil samples that were analyzed for organochlorine pesticides. No organochlorine pesticides were detected at or above the above reporting limits in any of the 10 samples analyzed. The ESA includes the following recommendations to address potential hazards and hazardous materials concerns on the site:

- Two oil filled plastic containers observed on the site should be removed and properly disposed of in accordance with applicable local, state, and federal guidelines.
- Stained soil was observed on the site near a cement platform located in the southwest corner of the site. The stained soil should be removed and disposed of in accordance with applicable local, state, and federal guidelines.
- A water well was located on the site. If the owner of the site plans to use the well in the future, the well should be capped with a lockable lid. If no future use of the well is planned, the turbine discharge head and impeller shaft should be removed, and the well should be abandoned in accordance with local, state, and federal guidelines. Alternatively, the well may be converted to a monitoring well.
- Surface water was observed flowing on the site from the adjacent property to the south. The source of the surface water should be identified. The surface water should then be prevented from entering the site or rerouted off of the site. Surface water from unknown sources has the potential to carry contamination onto the site.

A general biological survey and habitat assessment for sensitive species was conducted on the restoration site on October 17, 2019, by Callie Amoaku and Kathleen Dayton of Dudek. The species observed and their potential to occur on the site are described in the HMMP.

A record search for potential cultural resources was conducted by Dudek archeologists for the restoration site. No cultural resources have been recorded within the proposed restoration site and within a 1-mile buffer area. While no significant impacts or known tribal resources have been identified, the HMMP recommends monitoring cultural resources during earth disturbance work during restoration implementation.

Site Preparation

USG will select a County of San Diego-approved Project Biologist who will review the final HMMP and restoration construction documents and help to ensure that all site protections, pre-work bird surveys, and any other required items are adequately performed prior to beginning restoration work.

Weed and Invasive Species Removal: Although a former orchard was demolished several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and the hydraulic disconnection with Coyote Creek remains. Orchard debris wood chips and larger stumps and branches remain a significant impediment to flow as well as diversion berms and ditches. The restoration of the site would clean the site of all large and/or coarse woody debris, surface irrigation pipe, irrigation standpipes, electrical infrastructure, etc. Existing native and non-native vegetation would be removed where necessary. Topsoil containing the seed bank of existing native vegetation would be retained on site.

The non-native tamarisk within the restoration site would be cut to grade and treated with a systemic herbicide approved for use in wetland areas. Cut tree segments would be carefully removed from the site avoiding damage to adjacent habitat. Any other non-native herbaceous species present in the enhancement areas would be removed using hand tools. Cut vegetation would be bagged/containerized and disposed of off-site in a legal manner.

Grading: Following non-native vegetation removal, the northern berm and diversion ditch would be backfilled and leveled with the adjacent upstream topography to remove the impediment to downgradient braided flow. The eastern berm would be graded to create numerous breaks in the berm to create multiple flow paths for flood waters to enter the restoration site. Portions of the eastern berm would be retained as dune features where possible, without impeding re-establishment of braided flow onto the restoration site from the floodplain to the east and northeast of the restoration site. Interior non-jurisdictional areas of the restoration site would be graded to provide the opportunity for flood water to flow in braided pattern across the entire restoration site. No soil import or export is anticipated for the restoration project. Berm removal areas are shown Figure 2-6, "Viking Ranch Conceptual Restoration Plan."

The overall site would be graded to be compatible with the surrounding native land surface elevations, setting the top 2 inches of topsoil aside and used for final grade. Rough contour grading of ephemeral channels would take place to create micro-topographic variances as shown on Figure 2-3. The design is intended to re-establish braided flow patterns across the restoration site, consistent with adjacent Coyote Creek wash. It is anticipated that flood flows would naturally create macro- and micro-topographic fluvial features within the restoration site and a diversity of hydrologic and geomorphic conditions, leading to characteristic desert plant communities and animal habitat.

A grade structure is planned to be constructed in the southeast corner of the project where channel incision is beginning to run up into the proposed restoration site. If left unchecked, the head cut would continue to migrate upstream into the restoration site resulting in erosion of the land surface and destabilization of the floodplain. The structure would be constructed of wood timbers and slats to retain the soil on the restoration site. The effect of the structure would be to retain the upstream channel bed to stabilize the head cut that is presently causing unnatural flow and erosion on the site. The structure would be built to withstand water flow over the top, creating a stable bed gradient upstream (within the restoration site) and allowing water to continue flowing to the lower elevation floodplain present downstream.

Long term, the restoration site would once again become part of the wash and would receive hydrologic inputs from the surface flows of Coyote Creek.

Erosion Control: Heavy sediment transport is a typical function of desert washes and flood plains. The intent of the restoration project is to return the former agricultural field into the functional floodplain of Coyote Creek wash. As such, it is expected that sediment would be deposited and exported from the restoration site during flood events. Erosion control best management practices (BMPs) would be used where necessary to maintain normal sediment transport functions while limiting destabilization of the restoration site. In general, the native vegetation established through seeding would provide effective erosion control, however additional BMPs such as burlap encased straw wattles/fiber rolls or burlap gravel bags may be needed, as determined by the Project Biologist and, or Qualified SWPPP Practitioner (QSP). Any recommendations made by the QSP or anyone else for the restoration site would be pre-approved by the Project Biologist. BMPs with nylon netting would not be used in the restoration site. All straw wattles/fiber rolls would be certified free of noxious weeds. Erosion control seeding may not be applied to restoration site unless pre-approved by the Project Biologist. Non-native seeds would be avoided at all times.

Weed Control and Seed Selection and Application: Weed control would include hand-pulling of weeds, use of hand tools, weed whips, and/or foliar treatments of appropriate herbicides as determined by the Project Biologist. A native seed mix of appropriate desert plant species that are present within the Coyote Creek Wash would be imprinted onto the restoration site.

Avoidance and Minimization Measures: Impacts from fugitive dust that may occur during berm demolition, filling of the diversion ditch, and restoration site grading, would be avoided to the maximum extent practicable and minimized through water application for dust control during grading activities.

A biologist would be on site to oversee installation of temporary fencing, any grading within 100 feet of existing waters of the State to ensure permit compliance (404, other permits for the project), and educate contractors as needed on biological resources associated with the project.

Equipment would be checked for fluid leaks prior to operation and repaired as necessary. A spill kit for each piece of construction related equipment should be on site and must be used in the event of a spill.

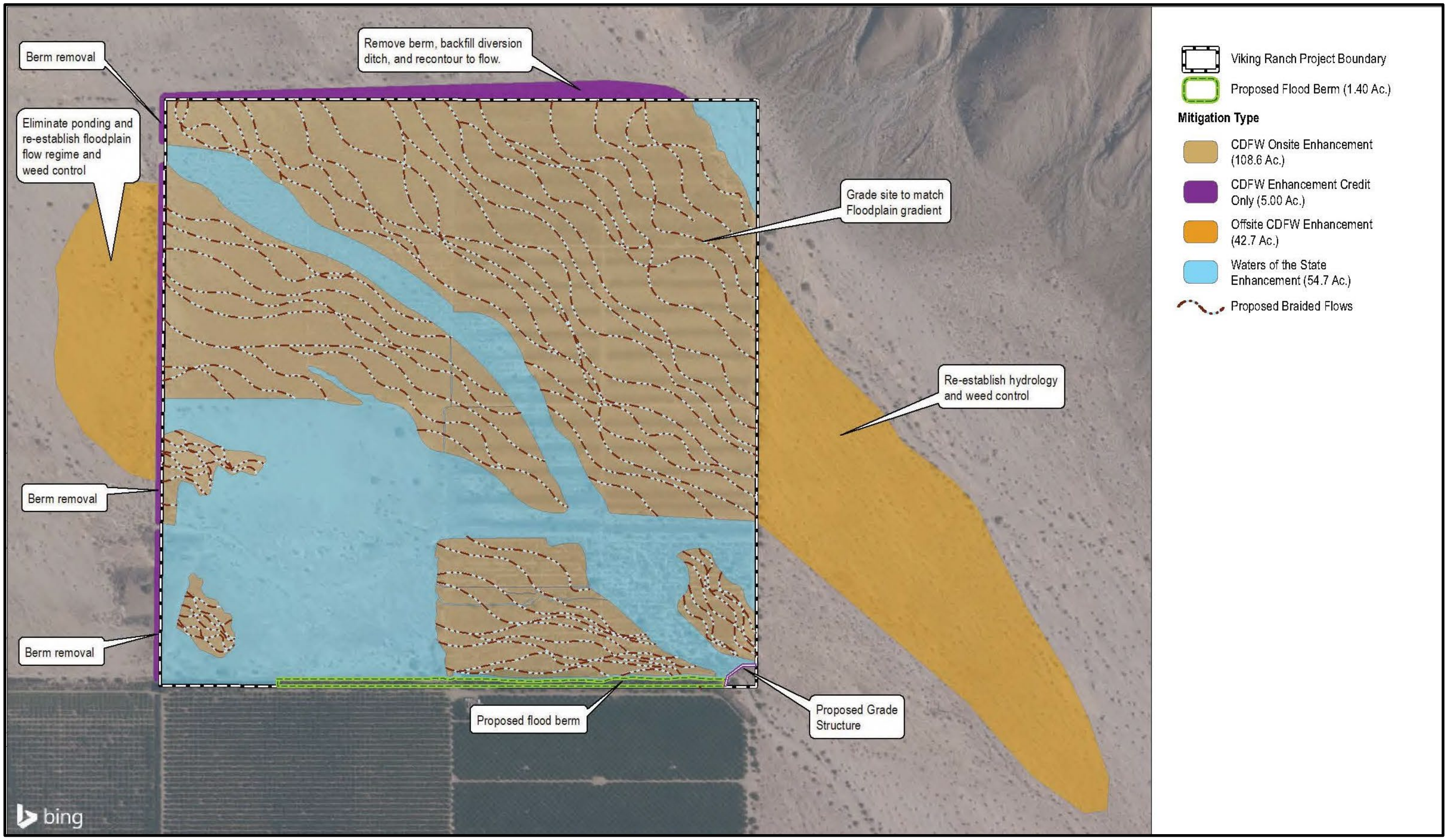
2.7 INTENDED USES OF THE SEIR

2.7.1 Imperial County

It is anticipated that this SEIR will provide environmental review for all discretionary approvals and actions necessary for this project. Permits and approvals would be required before the project could be implemented, although quarrying operations pursuant to the currently effective use permit are anticipated to continue throughout the environmental review process period.

As lead agency for the proposed project, the County is primarily responsible for the approvals required. The primary approval being sought is a Conditional Use Permit for development of a new production well, Well No. 3, and an associated pipeline to provide water to the Quarry. As part of any approval action for the project, the County would be required to certify the final SEIR, adopt findings of fact and overriding considerations (if necessary), and adopt a mitigation monitoring and reporting program. In Imperial County, the County Planning Commission is the approval authority for the Conditional Use Permit, which is an action appealable to the County Board of Supervisors.

Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.



SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2018
NOTE: Image has been modified by Benchmark Resources and is not printed to scale.

Figure 2-6
Viking Ranch Conceptual Restoration Plan

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This SEIR also evaluates potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Dudek 2022). Although these project components do not require entitlements from Imperial County, this SEIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA review for responsible agencies, which will include major grading permits issued by San Diego County.

2.7.2 Other Agencies Whose Approval May Be Required

In addition to Imperial County approval, other permits and approvals would be required before implementation of the project could proceed. The other agencies whose approval may be required include:

- County of San Diego (Major Grading Permit)
- California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
- Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)

The following public agency approvals have already been obtained:

- U.S. Bureau of Land Management (Right-of-Way Grants [Case file numbers CACA-056908 and CACA-044014)
- U.S. Fish and Wildlife Service (Biological Opinion FWS-ERIV-11B0345-19F1352)

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CHAPTER 3:

TERMINOLOGY, APPROACH, AND ASSUMPTION

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CHAPTER 3:
TERMINOLOGY, APPROACH, AND ASSUMPTIONS

This section provides an overview of the terminology, approaches, and assumptions underlying the topic-specific sections of this subsequent environmental impact report (SEIR) that follow. Included in this section is an overview of the terminology used, project analysis, organization of the sections, and methods for determining what impacts are significant.

3.1 TERMINOLOGY

To assist reviewers in understanding this SEIR, the following terms are defined:

- *Project* means the whole of an action that has the potential for resulting in a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment.
- *Project site* refers to the area analyzed in the 2008 EIR/EIS and consists of the Quarry expansion area, site of proposed Well No. 3, and the associated pipeline alignment.
- *Off-site mitigation sites* collectively refers to the Viking Ranch Restoration Site and the Old Kane Springs Road Preservation Site.
- *Environment* means the physical conditions that exist in the area and that will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is where significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and human-made (artificial) conditions.
- *Impacts* analyzed under the California Environmental Quality Act (CEQA) must be related to a physical change. Impacts are:
  - direct or primary impacts that would be caused by a proposed project and would occur at the same time and place; or
  - indirect or secondary impacts that would be caused by a proposed project and would be later in time or farther removed in distance but would still be reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induced changes in the pattern of land use; population density or growth rate; and related effects on air and water and other natural systems, including ecosystems.
- *Significant impact on the environment* means a substantial, or potentially substantial, adverse change in any of the physical conditions in the area affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.
- *Mitigation* consists of measures that avoid or substantially reduce a proposed project's significant environmental impacts by:
  - avoiding the impact altogether by not taking a certain action or parts of an action;
  - minimizing impacts by limiting the degree or magnitude of the action and its implementation;
  - rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

  - reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
  - compensating for the impact by replacing or providing substitute resources or environments.
- *Cumulative impacts* are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:
  - The individual impacts may be changes resulting from a single project or separate projects.
  - The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.
- *Threshold of significance* is a criterion established by the lead agency to identify at what level an impact would be considered significant. A criterion is defined by a lead agency based on examples found in CEQA or the CEQA Guidelines, scientific and factual data relative to the lead agency jurisdiction, views of the public in affected areas, the policy/regulatory environment of affected jurisdictions, and other factors.

This SEIR uses a variety of terms to describe the level of significance of adverse impacts. These terms are defined as follows:

- *No impact.* The project would have no direct or indirect effects on the environmental resource issue.
- *Less than significant*. An impact that is adverse but that does not exceed the defined thresholds of significance. Less than significant impacts do not require mitigation.
- *Potentially significant.* An impact that would be considered a significant impact as described above; however, the occurrence of the impact cannot be immediately determined with certainty. For CEQA purposes, a potentially significant impact is treated in this SEIR as if it were a significant impact and mitigation measures are recommended, when feasible, to avoid or reduce potentially significant impacts.
- *Significant*. An impact that exceeds the defined thresholds of significance and would or could cause a substantial adverse change in the environment. When available, mitigation measures are recommended to avoid the impact or reduce it to a less-than-significant level.
- *Significant and unavoidable*. An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures.

3.2 APPROACH TO THE ENVIRONMENTAL ANALYSIS

CEQA Guidelines require analysis of environmental impacts caused by a proposed project. All phases of a proposed project, including planning, development, and implementation, are evaluated in the analysis. CEQA Guidelines Section 15126.2 states that:

> An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the Lead Agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist

> at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, and the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause by bringing development and people into the area affected.

According to CEQA Guidelines Section 15126.4, an EIR should describe feasible measures that could minimize significant adverse impacts (Section 15126.4[a][[1]) and measures that are fully enforceable through permit conditions, agreements, or other legally binding process (Section 15126.4[a][2]). Mitigation measures are not required for effects that are found to be less than significant.

As discussed in Chapter 1, “Introduction,” and Appendices A-1, “Initial Study” and A-2, “NOC/NOP,” respectively, the County determined, through preliminary analysis of the project and agency comments received on the NOP and Initial Study, that the project would have no impact on aesthetics agricultural resources, energy, hazards and hazardous materials, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and service systems, or wildfire. Therefore, these issues are not addressed further in this SEIR.

3.3 APPROACH TO SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

3.3.1 Scope of Environmental Review

CEQA only applies to discretionary approvals by public agencies (14 California Code of Regulations Section 15352[a]). USG’s mining and reclamation activities at the project site are subject to vested rights and do not require any new permits or other approvals from the County. Accordingly, no discretionary approval would trigger CEQA review of the mining or reclamation components of the applicant’s operations at the project site. However, because proposed Well No. 3 and associated pipeline would support quarry operations by providing water for dust suppression, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

In contrast, the application for a Conditional Use Permit (CUP) requires the County’s discretionary approval, which subjects the development of Well No. 3 and associated pipeline to CEQA compliance. In addition, the proposed off-site restoration and preservation activities would require discretionary approvals from other agencies, including a Major Grading Permit San Diego County for the Viking Ranch restoration site. Although these activates will not require entitlements from Imperial County, this SEIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

Therefore, this SEIR limits environmental review to potential environmental impacts associated with development of Well No. 3 and associated pipelines, operations under the 2008 Quarry expansion, restoration of the Viking Ranch site, and preservation of the Old Kane Springs Road site. Other aspects of the applicant's existing surface mining and manufacturing operations in the project area are not part of the discretionary approval and thus, are not part of the project subject to CEQA review (see, e.g., *City of Ukiah v. County of Mendocino* (1987) 196 Cal. App. 3rd 47; *El Dorado County Taxpayers for Quality Growth v. County of El Dorado* (2004) 122 Cal.App.4th 1591.)

3.3.2 Use of an SEIR to Evaluate Environmental Impacts

The applicant has been continuously mining for gypsum at the project site since 1945. The County certified a joint EIR/EIS for expansion of the Quarry in 2008, followed by a Subsequent Environmental Impact Statement (SEIS) in 2019. The project site and off-site mitigation sites are included within the boundaries of the 2008 Quarry expansion project site, with the exception of the off-site restoration and preservation activities.

The proposed project contains revisions to the project that were not analyzed in the 2008 EIR/EIS. The California Supreme Court concluded in *Friends of the College of San Mateo Gardens v. San Mateo County Community College District* (2016) that a lead agency has broad discretion to utilize CEQA's subsequent review provisions if "at least some of the environmental impacts of the modified project were considered in the original document, such that the original document retains some relevance to the ongoing decision-making process" (1 Cal.5th 937, 951). In this case, a SEIR is appropriate to evaluate the environmental impacts resulting from the proposed project because numerous portions of the 2008 EIR/EIS remain relevant to the proposed revisions. In particular, proposed development of Well No. 3 and associated pipeline would be essentially unchanged from that evaluated in the 2008 EIR/EIS.

The SEIR will review and update some portions of the 2008 EIR/EIS because of project revisions, (namely the proposed off-site restoration and preservation activities), changed circumstances, and availability of new information (including updated technical studies) that was not available in 2008. As a result, the relevant 2008 EIR/EIS sections will be reevaluated and expanded considering project revisions, changed circumstances, and availability of new information, as required by CEQA. In addition, the SEIR only replaces and updates portions of the 2008 EIR/EIS that pertain to the project impact area. Other 2008 EIR/EIS analysis and mitigation for the larger 2008 Quarry expansion project are not addressed in this EIR and will therefore remain in place.

3.3.3 Statutory and Regulatory SEIR Provisions

When an EIR has been prepared for a project, CEQA establishes a presumption against requiring further environmental review. In summary, "no [supplemental or subsequent EIR] is required unless there are substantial changes in the project or the circumstances surrounding the project, or if new information becomes available." (*Santa Teresa Citizen Action Group v. City of San Jose* (2003) 114 Cal.App.4th 689, 703.) The lead agency has determined that preparation of an SEIR, pursuant to CEQA Section 21166, is necessary, given that substantial changes to the project are proposed and new information has become available since 1981.

California Public Resources Code Section 21166 provides:

> When an [EIR] has been prepared for a project…, no subsequent or supplemental [EIR] shall be required by the lead agency…unless one or more of the following events occurs:

(a) Substantial changes are proposed in the project which will require major revisions of the [EIR].

(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the [EIR].

(c) New information, which was not known and could not have been known at the time the [EIR] was certified as complete, becomes available.

CEQA Guidelines Section 15162, subdivision (a), expands on the three circumstances listed in Section 21166:

> (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR…due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
>
> (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR…due to the involvement of new significant, environmental effects or a substantial increase in the severity of previously identified significant effects; or
>
> (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete…, shows any of the following:
>
> > (A) The project will have one or more significant effects not discussed in the previous EIR…;
> >
> > (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
> >
> > (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
> >
> > (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The requested CUP would replace expired CUP 635-83, and development of Well No 3 and associated pipeline would be essentially unchanged from that previously proposed and analyzed in the 2008 EIR/EIS. However, the current proposal includes additional project components which were not part of the original 2008 Quarry expansion. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of waters of the United States (WoUS) at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 207-acre area at the Viking Ranch restoration site and the preservation of approximately 121 acres at the Old Kane Springs Road preservation site. The sites are shown on Figures 2-1, “Regional Location,” 2-2b, “Site Location—Quarry, Well No. 3, and Pipeline,” and 2-2c, “Site Location—Viking Ranch Restoration Site.” These activities could result in one or more significant effects not discussed in the previous EIR. Thus, the County has determined that an SEIR is required for this project. This SEIR is subsequent to the 2008 EIR/EIS.

3.3.4 Age of Previous CEQA Document

The age of the original EIR (2008) does not affect the County's ability to use an SEIR for the proposed project. CEQA established no rules regarding the expiration of prior environmental review. For example, the appellate court in *Mani Brothers Real Estate Group v. City of Los Angeles* (2007) upheld the city's decision to rely on an addendum prepared in 2005 for an EIR certified in 1989—a 16-year gap, except as to the issue of police services (153 Cal.App.4th 1385, 1390–1391, 1397–1398). On the topic of police services, the court required the county to prepare an SEIR, pursuant to Section 21166 (*Id.* at pp. 1403–1404). Indeed, *Mani Brothers* noted that courts have upheld even the use of an addendum (a much lesser degree of environmental review than an SEIR) under Section 21166 in "numerous contexts," including "in cases where many years had elapsed between the original EIR and later project revisions…and where the project's appearance had changed fairly dramatically" (*Id.* at p. 1398). In another case, the court endorsed the use of an SEIR, rather than a new EIR, when considering modifications to a conditional use permit (CUP) for mining operations in 1996, where that CUP had been previously studied in a 1976 EIR—20 years prior (*Fairview Neighbors, supra,* 70 Cal.App.4th at p. 243).

3.3.5 Project Description and Impacts Previously Considered in the 2008 EIR/EIS

The 2008 EIR/EIS evaluated the Quarry Expansion and Modernization project which consists of four general components:

1. Update and expansion at the Plaster City Plant,
2. Expansion of the mining operation at the Plaster City Quarry,
3. Development of Well No. 3 and associated pipeline for dust suppression at the Quarry,
4. Replacement of the existing water supply line to serve the Plant.

It should be noted that the focus of this SEIR is limited to the proposed Quarry Expansion and development of Well No. 3 and associated pipeline. The remaining project components are not included in the proposed project, and do not require further evaluation in this SEIR. The following is a summary of those project impacts identified in the 2008 EIR/EIS that relate only to the proposed Quarry expansion and development of Well No. 3 and associated pipeline.

Geology

- Slope Stability at Quarry (Impact 3.2-1)
- Loss of Paleontological Resources (Impact 3.2-2)

Hydrology and Water Quality

- Water Depletion at Quarry (Impact 3.3-5)
- Water Quality Degradation at Quarry (Impact 3.3-6)
- Surface Water Flow at Quarry (Impact 3.3-7)
- Cumulative Reduced Water Level (Impact 3.3-8)
- Cumulative Water Quality Degradation (Impact 3.3-9)

Vegetation

- Loss of Vegetation at Quarry (Impact 3.4-1)
- Loss of Vegetation at Well Site and Pipeline (Impact 3.4-2)

Wildlife

- Loss of Wildlife at Quarry (Impact 3.5-1)
- Loss of Wildlife at Well Site and Pipeline

Air Quality

- Increased PM_{10} and/or Dust Emissions at Quarry (Impact 3.6-1)
- Increased Exhaust Emissions at Quarry (Impact 3.6-2)
- Increased PM_{10} and/or Dust Emissions at Well Site and Pipeline (Impact 3.6-3)
- Increased Exhaust Emissions Along (Impact 3.6-7)

Aesthetics

- Aesthetic Degradation from Lighting and Glare at Quarry (Impact 3.7-1)
- Temporary and Permanent Aesthetic Degradation (Impact 3.7-2)

Cultural Resources

- Prehistoric Cultural Resources (Impact 3.8-1)
- Ethnic Cultural Resources (Impact 3.8-2)
- Historic Cultural Resources (Impact

Land Use

- Compatibility with Existing Land Uses (Impact 3.9-1)
- Quarry Compatibility with Wilderness Area (Impact 3.9-2)

Hazards and Hazardous Materials

- Groundwater Contamination Hazards at Plant and Quarry (Impact 3.10-1)
- Explosive Hazards at Quarry (Impact 3.10-2)

Traffic and Circulation

- Truck Traffic Increases (Impact 3.11-1)

Acoustics/Noise

- Noise Pollution at Quarry and Plant Sites (Impact 3.12-1)

Public Health and Safety

- Industrial Facility Safety (Impact 3.13-1)
- Reclaimed Quarry Site Safety (Impact 3.13-2)

3.3.6 New Impacts to Be Considered in the SEIR

The proposed project includes restoration and/or preservation of two off-site mitigation sites in San Diego County for the purpose of mitigating anticipated impacts to jurisdictional waters within the Quarry expansion area. These project components were not evaluated in the 2008 EIR/EIS or the 2019 SEIS but will undergo environmental review in this SEIR. Additionally, some portions of the 2008 EIR/EIS will be reviewed and updated in this SEIR, because circumstances have changes and new information has become available since publication of the 2008 EIR/EIS. As a result, the relevant EIR sections will be reevaluated and expanded to consider new information and changed circumstances, as required by CEQA.

3.4 RESOURCE SECTION FORMAT

Each resource section follows the same format and includes the following primary subsections:

- The **"Environmental Setting"** subsections provide an overview of the existing physical environmental conditions at the time this analysis was prepared, as relevant to each resource topic. When relevant to the analysis, the "Environmental Setting" subsection also provides the environmental conditions approved under the existing reclamation plan to provide a benchmark for the impact analysis of conditions with the project.
- The **"Regulatory Setting"** subsections identify the plans, policies, laws, regulations, and ordinances that are relevant to each resource subject. This subsection describes required permits and other approvals necessary to implement the project.
- The **"Significance Criteria and Analysis Methodology"** subsections provide criteria that define when an impact would be considered significant. Criteria are based on CEQA Guidelines, scientific and factual data, views of the public in affected area(s) where appropriate, the policy/regulatory environment of affected jurisdictions, or other factors. The methodology for the impact analysis is also provided as relevant to each resource topic.
- The **"Project Impacts and Mitigation Measures"** subsections provide an assessment of the potential impacts of the project and specify why impacts are found to be significant and unavoidable, significant, potentially significant, or less than significant, or why there is no environmental impact. Feasible mitigation measures to avoid or reduce the severity of identified impacts follow the impact discussions. Where feasible mitigation and feasible alternatives cannot reduce impacts to a less-than-significant level, the impacts are identified as significant and unavoidable. The analysis of cumulative impacts is provided in Chapter 6, "Other CEQA Topics."

3.5 MITIGATION MEASURES

In most cases, implementation of recommended mitigation measures would either result in complete avoidance of impacts or reduce impacts to less than significant. However, impacts that cannot be reduced to a less-than-significant level after application of feasible mitigation measures and alternatives are considered significant and unavoidable. As a condition of project approval, the applicant for the proposed project would be required to implement all the feasible mitigation measures identified in this EIR and adopted by the County.

In accordance with PRC Section 21081.6(a), the County would adopt a mitigation monitoring and reporting program (MMRP) at the time it certifies the EIR. The purpose of the MMRP is to ensure that the applicant would comply with the adopted mitigation measures when the project is implemented. The MMRP would identify each of the mitigation measures and describe the party responsible for monitoring, the time frame for implementation, and the program for monitoring compliance.

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CHAPTER 4:
ENVIRONMENTAL ANALYSIS

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CHAPTER 4:
ENVIRONMENTAL ANALYSIS

Sections 4.1 through 4.8 of this chapter document the resource impact analyses conducted for the project. As discussed in Section 1.1, “Purpose of a Subsequent Environmental Impact Report,” of this SEIR, the CEQA Guidelines require analysis of environmental impacts caused by a proposed project.

As an initial step in the environmental review process, issues identified in the Environmental Checklist of Appendix G of the CEQA Guidelines were considered to determine whether the project would have the potential to result in significant impacts associated with each issue. The initial review is documented in the initial study prepared for the project (see Appendix A-1, “Initial Study”). Sections 4.1 through 4.8 are based on the resource topics as listed in the CEQA Guidelines’ Appendix G Environmental Checklist. These resource topics are relevant to this project:

- air quality,
- biological resources,
- cultural resources,
- geology, soils, and paleontological resources,
- greenhouse gas emissions,
- hydrology and water quality,
- land use and planning,
- tribal cultural resources, and
- mandatory findings of significance.

Section 1.3.1, “Scope of this Environmental Impact Report,” discusses those issue areas for which a detailed analysis is not included. These issue areas are aesthetics, agricultural and forestry resources, energy, hazards and hazardous materials, mineral resources, noise, population and housing, public services, recreation, transportation, utilities and services systems, and wildfire.

The general methodologies used for analyzing project impacts for the resource analyses is discussed in Chapter 3, “Terminology, Methodology, and Assumptions.” Specific methodologies are discussed in each resource section.

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SECTION 4.1:
AIR QUALITY

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SECTION 4.1:
AIR QUALITY

This section of the subsequent environmental impact report (SEIR) documents potential project impacts associated with air quality and air pollutant emissions. Impacts considered in this section include the potential for project air emissions to exceed established thresholds or to cause or contribute to exceedance of state or federal ambient air quality standards. The section also considers human health risks associated with air pollutant emissions resulting from the project and the potential for public nuisance as a result of project odors.

The information in this section is based primarily on the *Air Quality Modeling Analysis US Gypsum Company—Southwest Plant* Trinity Consultants 1999) (Appendix C-1, “Air Quality Modeling Analysis”), the updated air emissions estimates and associated analysis provided in the 2019 SEIS Appendix C-2, “SEIS Air emissions Estimates”), new air emissions estimates for the Viking Ranch Restoration Site Appendix C-3, “Estimated Air Quality Emissions—Viking Ranch”), and other publicly available sources related to air quality.

4.1.1 Environmental Setting

This section discusses the existing air quality conditions in the project area including relevant environmental factors such as climate and topography, descriptions of pertinent air pollutants and associated attainment statuses, and local air quality monitoring data.

4.1.1.1 Regional Setting

Imperial County is in the southeastern corner of California with the relatively flat Imperial Valley and the southern Salton Sea in the center surrounded by multiple mountain ranges to the east and west. State and federal air quality regulations have designated this region as the Salton Sea Air Basin (SSAB). The Imperial County portion of the SSAB is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD). The SSAB encompasses the entirety of Imperial County and the southeast portion of Riverside County and is generally an arid desert region, with a significant land area located below sea level. The hot and dry conditions experienced in the region are a result of a large, semi-permanent high-pressure area that dominates the Imperial Valley and the presence of the coastal mountains to the west. The high pressure blocks most storms, except during the winter when the pressure is the weakest and tends to shift to the south. The coastal mountains tend to block moist air from entering the valley resulting in hot temperatures during the summer and dry weather year-round.

The Salton Sea Air Basin contains relatively few major emissions sources, but may experience emissions transported from Mexicali, Mexico and from significant vehicular traffic, particularly near the two international ports of entry: Calexico West and Calexico East. Emissions sources within the Salton Sea Air Basin consist of geothermal power generation, food processing, plaster and wallboard (gypsum) manufacturing, and other light industrial facilities. Additionally, the continuing fall in the water surface elevation of the Salton Sea is expected over time to generate fugitive dust originating from newly exposed sediments originally deposited underwater from agricultural runoff in the Salton Sea.

4.1.1.2 Pollutants and Health Effects

Air pollution contributes to a wide variety of adverse health effects. The United States Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for six of the most common air pollutants—carbon monoxide, lead, ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide—known as “criteria” air pollutants. The California Air Resources Board (CARB) also has adopted California ambient air quality standards (CAAQS) for these same criteria air pollutants. The presence of criteria pollutants in ambient air is generally caused by numerous, diverse, and widespread sources of emissions.

Ambient air quality standards are established to protect the public from adverse health effects of criteria pollutants and to provide protection against visibility impairment and damage to animals, crops, vegetation, and buildings. Health effects that have been associated with each of the criteria pollutants are summarized below.

Ozone

Ground-level ozone is a secondary pollutant that forms through the reaction of pollutants (e.g., oxides of nitrogen and reactive organic gases) in the atmosphere by a photochemical process involving sun energy. Chemicals that are precursors to ozone formation can also be emitted by natural sources, particularly trees and other plants. Ground-level ozone can pose risks to human health, in contrast to the stratospheric ozone layer that protects the earth from harmful wavelengths of solar ultraviolet radiation.

Short-term exposure to ground-level ozone can cause a variety of respiratory health effects, including inflammation of the lining of the lungs, reduced lung function, and respiratory symptoms such as cough, wheezing, chest pain, burning in the chest, and shortness of breath. Ozone exposure can decrease the capacity to perform exercise. Exposure to ozone can also increase susceptibility to respiratory infection. Exposure to ambient concentrations of ozone has been associated with the aggravation of respiratory illnesses such as asthma, emphysema, and bronchitis, leading to increased use of medication, absences from school, doctor and emergency department visits, and hospital admissions. Short-term exposure to ozone is associated with premature mortality. Studies have also found that long-term ozone exposure may contribute to the development of asthma, especially among children with certain genetic susceptibilities and children who frequently exercise outdoors. Long-term exposure to ozone can permanently damage lung tissue (EPA 2013).

Other health effects of ozone include the following:

- difficulty to breathe deeply and vigorously,
- shortness of breath and pain when taking a deep breath,
- coughing and sore or scratchy throat,
- inflammation and damage to the airways,
- aggravation of lung diseases such as asthma, emphysema, and chronic bronchitis,
- increased frequency of asthma attacks,
- increased susceptibility of the lungs to infection, and
- continued damage to the lungs even when the symptoms have disappeared (EPA 2012).

Nitrogen Oxides

Nitrogen oxides (NO_X) are a group of gases that form when nitrogen reacts with oxygen during combustion, especially at high temperatures. These compounds, including nitric oxide and nitrogen dioxide, can contribute significantly to air pollution, especially in cities and areas with high motor vehicle traffic. At high concentrations, nitrogen dioxide can damage sensitive crops, such as beans and tomatoes, and aggravate respiratory problems (EPA 2013).

Sulfur Dioxide

Fossil fuel combustion by electrical utilities and industry is the primary source of sulfur dioxide in the United States. People with asthma are especially susceptible to the effects of sulfur dioxide. Short-term exposures of asthmatic individuals to elevated levels of sulfur dioxide while exercising at a moderate level may result in breathing difficulties, accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Studies also provide consistent evidence of an association between short-term sulfur dioxide exposures and respiratory symptoms in children, especially those with asthma or chronic respiratory symptoms. Short-term exposures to sulfur dioxide have also been associated with respiratory-related emergency department visits and hospital admissions, particularly for children and older adults (EPA 2013).

Particulate Matter

Particulate matter (PM) is a generic term for a broad class of chemically and physically diverse substances that exist as discrete particles (liquid droplets or solids) over a wide range of sizes. Particles originate from a variety of man-made stationary and mobile sources, as well as from natural sources like forest fires. The chemical and physical properties of PM vary greatly with time, region, meteorology, and the source of emissions.

For regulatory purposes, EPA distinguishes between categories of particles based on size and has established standards for fine and coarse particles. PM_{10}, in general terms, is an abbreviation for particles with an aerodynamic diameter less than or equal to 10 micrometers (µm), and it represents inhalable particles small enough to penetrate deeply into the lungs (i.e., thoracic particles). PM_{10} is composed of a coarse fraction referred to as $PM_{10-2.5}$ or as thoracic coarse particles (i.e., particles with an aerodynamic diameter less than or equal to 10 µm and greater than 2.5 µm) and a fine fraction referred to as $PM_{2.5}$ or fine particles (i.e., particles with an aerodynamic diameter less than or equal to 2.5 µm). Thoracic coarse particles are emitted largely as a result of mechanical processes and uncontrolled burning. Important sources include resuspended dust (e.g., from cars, wind, etc.), industrial processes, construction and demolition operations, residential burning, and wildfires. Fine particles are formed chiefly by combustion processes (e.g., from power plants, gas and diesel engines, wood combustion, and many industrial processes) and by atmospheric reactions of gaseous pollutants (EPA 2013).

Although scientific evidence links harmful human health effects from exposures to both fine particles and thoracic coarse particles, the evidence is much stronger for fine particles than for thoracic coarse particles. Effects associated with exposures to both $PM_{2.5}$ and $PM_{10-2.5}$ include premature mortality, aggravation of respiratory and cardiovascular disease (as indicated by increased hospital and emergency department visits), and changes in sub-clinical indicators of respiratory and cardiac function. Such health effects have been associated with short- and/or long-term exposure to PM. Exposures to $PM_{2.5}$ are also associated with decreased lung function growth, exacerbation of allergic symptoms, and increased respiratory symptoms. Children, older adults, individuals with preexisting heart and lung disease (including asthma), and persons with lower socioeconomic status are among the groups most at risk for effects associated with PM exposures. Information is accumulating and currently provides suggestive evidence for associations between long-term $PM_{2.5}$ exposure and developmental effects, such as low birth weight and infant mortality resulting from respiratory causes (EPA 2013).

Lead

Historically, the primary source of lead emissions to the air was combustion of leaded gasoline in motor vehicles (such as cars and trucks), prior to the eradication of leaded gasoline in the United States in the mid-1990s. Since then, the remaining sources of lead air emissions have been industrial sources, including lead smelting operations, battery recycling operations, and piston-engine small aircraft that use leaded aviation gasoline. Lead accumulates in bones, blood, and soft tissues of the body. Exposure to lead can affect development of the central nervous system in young children, resulting in neurodevelopmental effects such as lowered IQ and behavioral problems (EPA 2013).

Carbon Monoxide

Gasoline-fueled vehicles and other on-road and non-road mobile sources are the primary sources of carbon monoxide (CO) in the United States. Exposure to carbon monoxide reduces the capacity of the blood to carry oxygen, thereby decreasing the supply of oxygen to tissues and organs. Reduction in oxygen supply to the heart, in particular, causes critical complications. People with any heart disease already have a reduced capacity for pumping oxygenated blood to the heart, which can cause them to experience myocardial ischemia (reduced oxygen to the heart), often accompanied by chest pain (angina), when exercising or under increased stress. For these people, short-term CO exposure further affects their body's already compromised ability to respond to the increased oxygen demands of exercise or exertion. Therefore, people with angina or heart disease are at the greatest risk from ambient CO. Other potentially at-risk populations include those with chronic obstructive pulmonary disease, anemia, diabetes, and those in prenatal or elderly life stages (EPA 2013).

4.1.1.3 Regional Air Quality and Attainment Status

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to the CAAQS and NAAQS. Both CARB and USEPA use monitoring station data to designate an area's attainment status with respect to the CAAQS and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified." The "unclassified" designation is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. See Table 4.1-1, "Ambient Air Quality Standards."

Table 4.1-1
Ambient Air Quality Standards

Pollutant	**Average Time**	**California Standards**[1]	**National Standards**[2]	
		Concentration[3]	***Primary***[3,4]	***Secondary***[3,5]
O_3	1 hour	0.09 ppm (180 mg/m^3)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 mg/m^3)	0.070 ppm (147 mg/m^3)	
NO_2	Annual Arithmetic Mean	0.030 ppm (57 mg/m^3)	0.053 ppm (100 mg/m^3)	Same as Primary Standard
	1 hour	0.18 ppm (339 mg/m^3)	0.100 ppm (188 mg/m^3)	

Pollutant	Average Time	California Standards[1]	National Standards[2]	
		Concentration[3]	***Primary***[3,4]	***Secondary***[3,5]
CO	8 hours	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	None
	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	
SO$_2$	24 hours	0.04 ppm (105 mg/m^3)	0.14 ppm (for certain areas)	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)	—
	3 hours	—	—	0.5 ppm (1300 mg/m^3)
	1 hour	0.25 ppm (655 mg/m^3)	0.075 ppm (196 mg/m^3	—
PM$_{10}$	24 hours	50 mg/m^3	150 mg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	20 mg/m^3	—	
PM$_{2.5}$	24 hours	No Separate State Standard	35 mg/m^3	Same as Primary Standard
	Annual Arithmetic Mean	12 mg/m^3	12 mg/m^3	15 mg/m^3
Lead[6]	30-day Average	1.5 mg/m^3	—	—
	Calendar Quarter	—	1.5 mg/m^3	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 mg/m^3	
Hydrogen sulfide	1 hour	0.03 ppm	—	—
Vinyl chloride	24 hours	0.01 ppm	—	—
Sulfates	24 hours	25 µg/m^3	—	—
Visibility-reducing particles	8 hours (10:00 a.m. to 6:00 p.m. PST)	Insufficient amount to produce an extinction coefficient of 0.23 per kilometer because of particles when the relative humidity is less than 70%	—	—

Source: CARB 2016

Notes:

ppm = parts per million by volume.
mg/m^3 = micrograms per cubic meter.
mg/m^3= milligrams per cubic meter.

1. California standards for O$_3$, CO, SO$_2$ (1-hour and 24-hour), NO$_2$, suspended particulate matter (PM$_{10}$, PM$_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than O$_3$, NO$_2$, SO$_2$, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O$_3$ standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For NO$_2$ and SO$_2$, the standard is attained when the 3-year average of the 98th and 99th percentile, respectively, of the daily maximum 1-hour average at each monitor within an area does not exceed the standard (effective April 12, 2010). For PM$_{10}$, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter (µg/m^3) is equal to or less than one. For PM$_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr.
   Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm (parts per million) in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
6. CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

4.1.1.4 Toxic Air Contaminants

According to Section 39655 of the California Health and Safety Code, toxic air contaminants (TACs) are a defined set of airborne pollutants that may "cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." A wide range of sources, from industrial plants to motor vehicles, emit TACs. TACs can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants.

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis or genetic damage; or short-term acute effects, such as eye watering, respiratory irritation (coughing), running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals, typically over a lifetime of exposure. Non-carcinogenic substances differ in they are generally assumed to feature a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed as an HI, which is the ratio of expected exposure levels to an acceptable reference exposure level.

TACs are primarily regulated through state and local risk management programs. These programs are designed to eliminate, avoid, or minimize the risk of adverse health effects from exposures to TACs. A chemical becomes a regulated TAC in California based on designation by the Office of Environmental Health Hazard Assessment (OEHHA). As part of its jurisdiction under Air Toxics Hot Spots Program (Health and Safety Code Section 44360(b)(2)), OEHHA derives cancer potencies and reference exposure levels (RELs) for individual air contaminants based on the current scientific knowledge that includes consideration of possible differential effects on the health of infants, children and other sensitive subpopulations, in accordance with the mandate of the Children's Environmental Health Protection Act (Senate Bill 25, Escutia, Chapter 731, Statutes of 1999, Health and Safety Code Sections 39669.5 et seq.).

4.1.1.5 Air Quality Conditions at the Time of the 2008 EIR/EIS

Attainment Status and Planning

At the time the 2008 EIR/EIS was published, the ICAPCD was designated nonattainment for both federal and state standards for ozone and PM_{10}. The ICAPCD was in the process of preparing an attainment plan for the PM_{10} standards that would demonstrate a reduction of PM_{10} emissions by 5 percent each year until the standard is attained.

Monitoring Data

The 2008 EIR/EIS provided a summary of air quality monitoring data taken at CARB monitoring stations located throughout Imperial County. The nearest monitoring station to the Quarry was at Westmorland, approximately 25 miles east of the Quarry, surrounded by urban and agricultural uses. Data collected at the Calexico east station for nitrogen dioxide and sulfur dioxide was also utilized as the Westmorland station did not record these pollutants.

According to the 2008 EIR/EIS, monitoring data collected at these stations for the period 1997-2001 indicated that concentrations from one hour of ozone collection exceeded the State standards an average of 14 days per year and exceeded the federal standards on an average of 2 days per year. The more stringent PM_{10} state standards were exceeded about 90 days per year and the federal standard was exceeded about 2 days per year. Except for a couple days in which NO_x was exceeded in Calexico, measurements of the other pollutants did not exceed the air quality standards.

4.1.1.6 Air Quality Conditions at Present

Imperial County Air Pollution Control District

The project site, including the Quarry expansion area, Well No. 3 site, and associated pipeline alignment are located in Imperial County which is under the jurisdiction of the ICAPCD.

Attainment Status and Planning

The portion of the SSAB that is in Imperial County is currently designated nonattainment (moderate) for both federal and state standards for ozone. The area is also partially designated nonattainment (moderate) for the federal $PM_{2.5}$ standard. This partial nonattainment area encompasses the Imperial Valley in the southcentral urban and agricultural portions of the County. The Quarry, well site, and associated pipeline alignment are outside and west of this designated partial nonattainment area for $PM_{2.5}$. Imperial County is in attainment of the state $PM_{2.5}$ standard and in attainment or designated unclassified for the remaining criteria air pollutant standards.

Since publication of the 2008 EIR/EIS, the ICAPCD achieved attainment of the federal and state PM_{10} standards and in 2018, both ICAPCD and CARB approved the Imperial County 2018 Redesignation Request and Maintenance Plan for PM_{10}. This plan demonstrates that the ICAPCD has measures in place to ensure compliance with the PM_{10} standards through 2030. Also in 2018, the ICAPCD approved the Imperial County 2018 Annual $PM_{2.5}$ State Implementation Plan (SIP) requiring reduction of $PM_{2.5}$ emissions by 5 percent each year until the standard is attained. With regard to ozone emissions, the ICAPCD adopted the 2017 Imperial County 2008 8-Hour Ozone SIP. Each of these plans is described further in the regulatory setting subsection below.

Monitoring Data

The two nearest monitoring stations to the project site are in El Centro and Westmoreland, approximately 20 and 25 miles east of the Quarry and well site/pipeline corridor, respectively. The El Centro station measures ozone, PM_{10}, $PM_{2.5}$, and nitrogen dioxide. The Westmoreland station measures ozone and PM_{10}. The monitoring stations are surrounded by urban and agricultural uses. By contrast, the Quarry is in an isolated canyon surrounded by open space.

According to the 2019 SEIS, the data collected at these stations between 2014 and 2017 indicate that 8-hour concentrations of ozone exceeded the federal standard an average of 13 days per year at the El Centro station. The 8-hour concentrations of ozone did not exceed the federal standard at the Westmoreland station. The federal PM_{10} standard was exceeded an average of about 5 days per year at the El Centro station, and 17 days per year at the Westmoreland station. $PM_{2.5}$ and NO_x federal standards were not exceeded at the El Centro station; those pollutants are not monitored at the Westmoreland station. Measurements of the other pollutants monitored did not exceed the applicable air quality standards.

San Diego County Air Pollution Control District

The Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site are located in San Diego County which is under the jurisdiction of the San Diego County Air Pollution Control District (SDAPCD).

Attainment Status and Planning

The SDAPCD is currently designated nonattainment of the federal and state 8-hour ozone standards, nonattainment of the state 1-hour ozone standard, and nonattainment of the state PM_{10} and $PM_{2.5}$ standards. The San Diego County APCD is designated attainment or unclassified for the remaining criteria air pollutant standards.

The SDAPCD's State Ozone Attainment Plan ("Regional Air Quality Strategy" or RAQS) was initially adopted in 1992 and was most recently updated in 2023. The RAQS identifies measures to reduce emissions from sources regulated by the SDAPCD, primarily stationary sources such as industrial operations and manufacturing facilities (SDAPCD 2023).

Monitoring Data

The nearest CARB air quality monitoring stations to the offsite mitigation sites in San Diego County, are the Alpine-Victoria Drive station (about 35 miles west) which monitors ozone and NO_x and the El Cajon stations (40 miles west) which monitor ozone, carbon monoxide, NOx, SO_2, and particulate matter. A review of monitoring data from these stations for the years 2017 through 2021 indicates that the 8-hour ozone standards were exceeded a total of 123 times and the 1-hour state ozone standard was exceeded a total of 22 times at the Alpine station during the three-year period (SDAPCD 2021).

4.1.2 Regulatory Setting

Federal, state, and local regulations pertaining to air quality potentially applicable to the project are discussed below.

4.1.2.1 Federal

U.S. Environmental Protection Agency

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The U.S. EPA is responsible for implementing most aspects of the Clean Air Act, which include NAAQS for major air pollutants, performance standards for new and modified sources, hazardous air pollutant standards, approval of state attainment plans, motor vehicle emission standards, stationary source emission standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions. NAAQS are established for "criteria pollutants" under the Clean Air Act, which are O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires EPA to reassess NAAQS at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed NAAQS must prepare a state implementation plan that demonstrates how those areas will attain the standards within mandated time frames. NAAQS are presented in Table 4.1-1.

4.1.2.2 State

California Air Resources Board

The Clean Air Act delegates the regulation of air pollution control and the enforcement of NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to the CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB is responsible for ensuring implementation of the California Clean Air Act (CCAA) and the federal Clean Air Act and regulating emissions from motor vehicles, mobile equipment, and consumer products. CARB also sets health-based air quality standards and control measures for TACs. CARB has established CAAQS, which are generally more restrictive than NAAQS. CAAQS describes an adverse condition (i.e., pollution levels must be below these standards before a basin can attain the standard). CAAQS for O_3, CO, SO_2 (1 hour and 24 hours), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. NAAQS and CAAQS are presented in Table 4.1-1.

Idling of Commercial Heavy-Duty Trucks

In January 2005, CARB adopted an Airborne Toxic Control Measure (ATCM) to control emissions from idling trucks. The ATCM, which became effective February 1, 2005, prohibits idling for more than 5 minutes for all diesel-fueled commercial motor vehicles with a gross vehicular weight ratings over 10,000 pounds that are or must be licensed for operation on highways. The ATCM contains several exceptions that allow trucks to idle, including during the following periods:

(1) a bus is idling for

  (A) up to 10.0 minutes prior to passenger boarding, or

  (B) when passengers are onboard;

(2) idling of the primary diesel engine is necessary to power a heater, air conditioner, or any ancillary equipment during sleeping or resting in a sleeper berth. This provision does not apply when operating within 100 feet of a restricted area;

(3) idling when the vehicle must remain motionless due to traffic conditions, an official traffic control device, or an official traffic control signal over which the driver has no control, or at the direction of a peace officer, or operating a diesel-fueled APS at the direction of a peace officer;

(4) idling when the vehicle is queuing that at all times is beyond 100 feet from any restricted area;

(5) idling of the primary engine or operating a diesel-fueled APS when forced to remain motionless due to immediate adverse weather conditions affecting the safe operation of the vehicle or due to mechanical difficulties over which the driver has no control;

(6) idling to verify that the vehicle is in safe operating condition as required by law and that all equipment is in good working order, either as part of a daily vehicle inspection or as otherwise needed, provided that such engine idling is mandatory for such verification;

(7) idling of the primary engine or operating a diesel-fueled APS is mandatory for testing, servicing, repairing, or diagnostic purposes;

(8) idling when positioning or providing a power source for equipment or operations, other than transporting passengers or propulsion, which involve a power take off or equivalent mechanism and is powered by the primary engine for:

(A) controlling cargo temperature, operating a lift, crane, pump, drill, hoist, mixer (such as a ready mix concrete truck), or other auxiliary equipment;

(B) providing mechanical extension to perform work functions for which the vehicle was designed and where substitute alternate means to idling are not reasonably available; or

(C) collection of solid waste or recyclable material by an entity authorized by contract, license, or permit by a school or local government;

(9) idling of the primary engine or operating a diesel-fueled APS when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency;

(10) idling of the primary engine or operating a diesel-fueled APS by authorized emergency vehicles while in the course of providing services for which the vehicle is designed;

While the goal of this measure is primarily to reduce public health impacts from diesel emissions, compliance with the regulation also results in energy savings in the form of reduced fuel consumption from unnecessary idling (CARB 2020).

In-Use Off-Road Diesel-Fueled Fleets

On July 26, 2007, CARB adopted the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Diesel Regulation) to reduce PM and NO_X emissions from existing off-road heavy-duty diesel vehicles in California. This regulation required that specific fleet average requirements are met for NO_X emissions and for PM emissions. Where average requirements cannot be met, Best Available Control Technology (BACT) requirements apply. All self-propelled off-road diesel vehicles 25 horsepower (hp) or greater used in California and most two-engine vehicles (except on-road two-engine sweepers) are subject to the Off-Road Diesel Regulation. This includes vehicles that are rented or leased (rental or leased fleets).

The Off-Road Diesel Regulation:

- requires all vehicles be reported to CARB and labeled,
- restricts the adding of older vehicles into fleets starting on January 1, 2014,
- requires fleet owners to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS) i.e., exhaust retrofits,
- imposes limits on idling and requires a written idling policy, and
- requires a disclosure when selling vehicles.

All fleets must meet emission performance and reporting requirements by January 1, 2028. Annual reporting requirements, including the Responsible Official Affirmation of Reporting form, must be completed by March 1, 2028. Large fleets must report annually from 2012 to 2023, medium fleets from 2016 to 2023, and small fleets from 2018 to 2028. For each annual reporting date, a fleet must report any changes to the fleet, hour meter readings (for low-use vehicles and vehicles used a majority of the time, but not solely, for agricultural operations), and also must submit the Responsible Official Affirmation of Reporting (ROAR) form. Following January 1, 2023, small fleets may no longer add a vehicle with a Tier 2 engine to its fleet. The engine tier must be Tier 3 or higher. Medium and large fleets may not add tier 2 engines as of January 1, 2018. The goal of the In-Use Off-Road Diesel-Fueled Fleets Regulation is to reduce PM and NO_X emissions from in-use (existing) off-road heavy-duty diesel vehicles in California (CARB 2020).

Truck and Bus Regulation

The Truck and Bus regulation affects individuals, private companies, and Federal agencies that own diesel vehicles with a Gross Vehicle Weight Rating (GVWR) greater than 14,000 lbs. that operate in California. The regulation also applies to publicly and privately owned school buses; however, their compliance requirements are different, and reporting is not required. The regulation does not apply to state and local government vehicles and public transit buses because they are already subject to other regulations. Vehicles that are exempt from other heavy duty diesel regulations, such as Cargo Handling Equipment, Drayage Truck, and Solid Waste Collection Vehicle regulations, may be subject to the Truck and Bus Regulation. Drayage and solid waste collection trucks with 2007 to 2009 model year engines must meet the requirements of the regulation by January 1, 2023.

Heavier trucks and buses with a GVWR greater than 26,000 pounds must comply with a schedule by engine model year or owners can report to show compliance with more flexible options. All heavier vehicles with 1996 or newer model year engines should have a PM filter (OEM or retrofit). By January 1, 2023, all trucks and buses must have 2010 model year or later engines with few exceptions.

Lighter trucks and buses with a GVWR of 14,001 to 26,000 lbs. have replacement requirements starting January 1, 2015. The Engine Model Year Schedule for Lighter vehicles shown in the table to the right lists the compliance dates by engine model year for existing lighter trucks. Starting January 1, 2015, lighter vehicles with engines that are 20 years or older must be replaced with newer trucks (or engines). Starting January 1, 2020, all remaining vehicles need to be replaced so that they all have 2010 model year engines or equivalent emissions by January 1, 2023 (CARB 2020).

4.1.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan Conservation Element* pertain to air quality and the proposed project:

Conservation and Open Space Element

Goal 7: The County shall actively seek to improve the quality of air in the region.

Objective 7.1: Ensure that all projects and facilities comply with current Federal, state, and local requirements for attainment of air quality objectives.

Objective 7.2: Develop management strategies to mitigate fugitive dust. Cooperate with all Federal, State and local agencies in the effort to attain air quality objectives.

Objective 7.4: Enforce and monitor environmental mitigation measures relating to air quality.

Imperial County Air Pollution Control District

Imperial County Air Pollution Control District (ICAPCD) shares responsibility with CARB for ensuring that all state and federal ambient air quality standards are achieved and maintained within the County. Generally, the ICAPCD is responsible for the inspection of stationary sources, monitoring of ambient air quality, and planning activities such as modeling and maintenance of the emissions inventory.

Attainment Plans

Under the CCAA, ICAPCD is required to develop an air quality plan for nonattainment criteria pollutants. The ICAPCD is designated nonattainment for the federal and state standards for 8-hour ozone and is designated nonattainment (partial) for the federal $PM_{2.5}$ standard. The ICAPCD adopted an Ozone State Implementation Plan (SIP) in 2017 and an Annual Particulate Matter Less than 2.5 Microns in Diameter State Implementation Plan in 2018.

Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard

The 2017 Ozone SIP was adopted by ICAPCD in September 2017 and subsequently by CARB. The SIP shows through photochemical grid modeling and a weight of evidence analysis that, but for emissions emanating from Mexico, the control measures included in the SIP are adequate to attain the 2008 Ozone standard and maintain this status through the July 20, 2018, attainment date and into the future.

The ICAPCD is working cooperatively with counterparts from Baja California Department of Environmental Protection to implement emissions reductions strategies and projects for air quality improvements at the border. The two states strive to achieve these goals through local input from government officials and representatives from academia, environmental organizations, and the general public. The Imperial Valley-Mexicali Air Quality Task Force (AQTF) has been organized to address unique issues in the binational Mexicali/Imperial Valley air shed. This group promotes regional efforts to improve the air quality monitoring network, to inventory emissions, and to develop air pollution transport modeling, as well to create programs and strategies to improve air quality.

Imperial County 2009 PM_{10} SIP and 2018 Redesignation Request and Maintenance Plan for PM_{10}

The ICAPCD adopted the 2009 PM_{10} SIP in August 2009 that developed fugitive dust control measures (Regulation VIII). The EPA approved these Regulation VIII fugitive dust rules into the Imperial County portion of the California SIP in April 2013. The Regulation VIII fugitive dust rules (as updated) were based on the related 2005 Best Available Control Measure (BACM) analysis. Rules 800 to 805 of the Regulation VIII fugitive dust rules were included in the 2008 EIR/EIS. USG's operations are required to comply with these regulations as applicable and updated enforceable through the ICAPCD.

The ICAPCD and CARB approved the Imperial County 2018 Redesignation Request and Maintenance Plan for PM_{10} in late 2018. This document revises the 2009 PM_{10} SIP and requests redesignation of the Imperial Valley Planning Area as attainment. The Imperial Valley Planning Area is currently designated as nonattainment (serious) area for the PM_{10} NAAQS but can be redesignated as attainment if, among other requirements, the USEPA determines that the NAAQS has been attained. A review of the PM_{10} monitoring data from 2014 through 2016 shows that, when excluding exceptional events (i.e., high wind driven dust storms), the Imperial Valley Planning Area did not violate the federal 24-hour PM_{10} standard.

Imperial County 2013 $PM_{2.5}$ SIP (2006 24-Hour $PM_{2.5}$)
The ICAPCD and the CARB approved the 2013 $PM_{2.5}$ SIP in December 2014 and this SIP is under review by the EPA. The 2013 $PM_{2.5}$ SIP concluded that the majority of the $PM_{2.5}$ emissions result from emissions originating in Mexico. The SIP demonstrates attainment of the 2006 $PM_{2.5}$ NAAQS “but for” transport of international emissions from Mexicali, Mexico. In accordance with the CAA, the $PM_{2.5}$ SIP satisfies the attainment demonstration requirement satisfying the provisions of the CAA and the County is considered in attainment for CAAQS. However, the partial County area is currently considered nonattainment (moderate) for $PM_{2.5}$ NAAQS. Note that the project sites are outside of this partial nonattainment area for $PM_{2.5}$.

CEQA Air Quality Handbook
ICAPCD’s CEQA Air Quality Handbook provides guidance to assist lead agencies in determining the level of significance of project-related emissions, and contains thresholds of significance for criteria air pollutants, TACs, and odors. According to ICAPCD’s Air Quality Handbook, project emissions that exceed the recommended threshold levels are considered potentially significant and should be mitigated where feasible. Although the Air Quality Handbook is intended to help lead agencies navigate through the CEQA process, ICAPCD indicates that the guidelines for implementation of its significance thresholds are advisory only and should be followed by local governments at their own discretion.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to air quality and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-14: Sustainable Land Development. Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs through minimized transportation and energy demands, while protecting public health and contributing to a more sustainable environment.

Policy COS-14.8: Minimize Air Pollution. Minimize land use conflicts that expose people to significant amounts of air pollutants.

Policy COS-14.9: Significant Producers of Air Pollutants. Require projects that generate potentially significant levels of air pollutants and/or GHGs such as quarries, landfill operations, or large land development projects to incorporate renewable energy, and the best available control technologies and practices into the project design.

Policy COS-14.10: Low-Emission Construction Vehicles and Equipment. Require County contractors and encourage other developers to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions.

Policy COS-14.11: Native Vegetation. Require development to minimize the vegetation management of native vegetation while ensuring sufficient clearing is provided for fire control.

Goal COS-15: Sustainable Architecture and Buildings. Building design and construction techniques that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment.

Policy COS-15.6: Design and Construction Methods. Require development design and construction methods to minimize impacts to air quality.

San Diego County Air Pollution Control District

The San Diego County APCD is responsible for regulating stationary sources of air emissions in the San Diego Air Basin (SDAB). The San Diego APCD Rules and Regulations establish emission limitations and control requirements for stationary sources, based on their source type and magnitude. The San Diego County APCD and the San Diego Association of Governments are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County RAQS was initially adopted in 1991 and is periodically updated to reflect updated information on air quality, emission trends, and new feasible control measures. The most recent update was adopted March 9, 2023 (San Diego County APCD 2023).

The RAQS includes all feasible control measures that can be implemented for the reduction of O_3 precursor emissions. To be consistent with the RAQS, a project must conform to emission growth factors outlined in the plan. Control measures for stationary sources proposed in the RAQS and adopted by the San Diego County APCD are incorporated into the San Diego County APCD Rules and Regulations. The San Diego APCD has also developed the air basin’s input to the SIP. The SIP includes the San Diego County APCD’s plans and control measures for attaining the O_3 NAAQS. The SIP is also updated on a triennial basis. The San Diego County APCD developed its 2020 Eight-Hour Ozone Attainment Plan for San Diego County, which provides plans for attaining and maintaining the 8-hour NAAQS for O_3 (San Diego County APCD 2020). A Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard was adopted by the SDAPCD in 2012 but has not yet been approved by the USEPA (San Diego County APCD 2012). The SDAB is designated attainment or unclassified for the remaining criteria air pollutants.

4.1.3 Significance Thresholds and Analysis Methodology

4.1.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project’s air quality impacts using the following significance criteria:

Significant impacts to air quality may result if the proposed project:

- Causes or makes worse a violation of an ambient air quality standard (ICAPCD Rule 207C.5.b1);
- Interferes or delays with the attainment of any ambient air quality standard;
- Conflicts with implementation of any applicable air quality plans of the ICAPCD;

- Results in a cumulatively considerable net increase in ozone and PM_{10} which the Salton Sea Air Basin is in nonattainment;
- Causes sensitive receptors to be exposed to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.

CEQA Appendix G Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on air quality if it would:

a) conflict with or obstruct implementation of the applicable air quality plan;
b) result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard;
c) expose sensitive receptors to substantial pollutant concentrations; or
d) result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Imperial County Air Pollution Control District

The Imperial County Air Pollution Control District's *CEQA Air Quality Handbook* provides quantitative significance thresholds to assist lead agencies in making a determination on the type of environmental document to prepare. When the preliminary analysis of a project indicates that the proposed project may potentially be near the thresholds identified in Table 4.1-2, "ICAPCD Thresholds of Significance for Project Operations," below, the lead agency may consider the project as having a potentially significant impact.

Table 4.1-2
ICAPCD Thresholds of Significance for Project Operations

Pollutant	Tier I	Tier II
NO_x and ROG	Less than 137 lbs/day	137 lbs./day and greater
PM_{10} and SO_x	Less than 150 lbs./day	150 lbs./day and greater
CO and $PM_{2.5}$	Less than 550 lbs./day	550 lbs./day and greater
Level of Significance	Less than Significant Impact	Significant Impact
Level of Analysis	Initial Study	Comprehensive Air Quality Analysis Report
Environmental Document	Negative Declaration	Mitigated Negative Declaration or Environmental Impact Report

Source: ICAPCD *CEQA Air Quality Handbook* 2017

In addition to the quantitative thresholds shown in Table 4.1-2, the ICAPCD requires Tier I projects to implement all feasible standard mitigation measures provided in the *CEQA Air Quality Handbook* in order to achieve a level of insignificance. For Tier II projects to achieve a level of insignificance, all feasible standard mitigation measures as well as all feasible discretionary mitigation measures must be implemented.

San Diego County Air Pollution Control District

The San Diego County Air Pollution Control District (SDAPCD) has established annual significance thresholds for NO_X and reactive organic gases (ROG) for stationary sources. However, SDAPCD has not established rules for characterizing impacts from construction or general land use development. SDAPCD informally recommends quantifying construction emissions and comparing them to significance thresholds found in SDAPCD regulations for stationary sources (pursuant to SDAPCD Rule 20.1, et seq.) and shown in

Table 4.1-3, "San Diego County APCD Air Quality Significance Threshold Standards." Per SDAPCD (2007), daily significance thresholds are most appropriately used for standard construction emissions.

Table 4.1-3
San Diego County APCD Air Quality Significance Threshold Standards

Significance Thresholds (lbs./day)	NO_x	VOC	PM_{10}	$PM_{2.5}$	CO	SO_x
Construction (lbs./day)	250	75	100	55	550	250
Construction (tons/year)	40	13.7	15	10	100	40

Source: San Diego County APCD 2017
Notes: The San Diego County APCD does not have thresholds of significance for VOCs or $PM_{2.5}$. As such, the VOC and PM2.5 thresholds for construction from the SCAQMD's CEQA Air Quality Significance Thresholds (SCAQMD 2015) were utilized.

SDAPCD Rules do not provide established significance thresholds for emissions of volatile organic compounds (VOCs) or $PM_{2.5}$. The use of the screening level for VOCs specified by the South Coast Air Quality Management District (SCAQMD), which generally has stricter emissions thresholds than SDAPCD, is recommended for evaluating projects in San Diego County. For $PM_{2.5}$, the EPA "Proposed Rule to Implement the Fine Particle National Ambient Air Quality Standards" published September 8, 2005, which quantifies significant emissions as 55 pounds per day or 10 tons per year, is used as the screening-level criteria, as shown in Table 4.1-3.

4.1.3.2 Analysis Methodology

The following sections discuss the methods for evaluating emission of criteria air pollutants, health impacts associated with project emissions, and emission of objectionable odors.

As described previously, the project does not propose any changes to Quarry operations or the location, development, or operation of Well No. 3 and associated pipeline from that evaluated in the 2008 EIR/EIS and 2019 SEIS. Therefore, the following analysis focuses on emissions associated with restoration and preservation of the off-site mitigation sites which would be limited to temporary, construction-phase emissions. These emissions are compared against significance thresholds adopted by SDAPCD.

Criteria Pollutant Emissions

The methodology for analyzing the effects of the proposed project on air quality is the same as discussed in the 2008 EIR/EIS. Activities associated with the construction and operation of the proposed Quarry expansion and modernization were evaluated to determine the potential to affect existing air quality conditions. Construction and operation emissions were assessed in accordance with EPA and ICAPCD air quality regulations using CARB's Off-Road Emissions Model, CARB Off-Road Diesel Tier Emission Factors, and Off-road and On-Road Mobile Source Emissions' Factors (EMFAC per SCAQMD website) and emissions estimates were compared with applicable state and federal air quality standards.

Health Risk

Exposure to equipment exhaust and fugitive dust can lead to various health impacts. Specifically, the following three types of public health impacts are commonly associated with exposure to trace metals in dust and diesel particulate matter:

1. Cancer risk
2. Acute non-cancer risk

3. Chronic non-cancer risk

Due to the lack of sensitive receptors near the project site and offsite mitigation sites, a formal, quantitative health risk assessment was not performed. The following analysis of potential health risks associated with diesel exhaust and particulate matter emissions is qualitative and based on the distances between emission source and receptors, the projects estimated emissions as they compare to applicable air district significant thresholds, and wind direction and topography of the area.

Odor

For consideration of odors, the impact analysis relies on the screening distances for various land uses that typically generate odors presented in the ICAPCD's CEQA Guidelines as well as compliance history obtained from ICAPCD for the existing Quarry operation.

4.1.4 Project Impacts and Mitigation Measures

4.1.4.1 2008 EIR/EIS Impact Analysis

Under the Quarry expansion, excavation operations onsite would extend for approximately 80 years and Quarry production would increase from approximately 1.13 million tons per year to 1.92 million tons per year. Criteria air pollutant emissions associated with the Quarry operations include stationary sources, fugitive dust sources, and mobile sources. The 2008 EIR/EIS estimated emissions of criteria air pollutants for the pre-project and post-project conditions and found that emissions resulting from the expansion and modernization of the Quarry would not exceed the CEQA thresholds of significance presented in the CEQA Air Quality Handbook (ICAPCD 2017) and the impact would be less than significant. Although the criteria air pollutants generated by expansion of the Quarry would not exceed the CEQA thresholds of significance, the 2008 EIR/EIS noted that exhaust emissions from mobile equipment would increase due to increased production of gypsum at the Quarry. The 2008 EIR/EIS includes the following mitigation measures to further limit exhaust emissions from mobile equipment at the Quarry:

> ***Mitigation Measure 3.6-1a:*** *USG shall ensure all equipment is maintained and tuned according to manufacturer's specifications.*
>
> ***Mitigation Measure 3.6-1b:*** *USG shall schedule production activities to minimize daily equipment operations and idling trucks.*
>
> ***Mitigation Measure 3.6-1c:*** *USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.*

USG transports gypsum from the Quarry to the Plant via a private narrow-gauge railroad line which has been in operation since the 1920s. The analysis of Quarry expansion also evaluated the potential of the emissions generated by the increased number of train trips to and from the Quarry to exceed significance thresholds. It was found that the net exhaust emissions changes for criteria pollutants from the diesel locomotive between the pre-project and the post-project conditions would not exceed the CEQA thresholds of significance. The 2008 EIR/EIS noted that construction of Well No. 3 and the associated pipeline would be relatively short term

(10 weeks) and would disturb a relatively small area (1/8 acre would be disturbed during well, and about 1,500 feet of trench, about one acre, would be active at any given time during pipeline construction). The 2008 EIR/EIS found that the combined emissions from the construction of both the Quarry and Plant pipelines would not exceed the CEQA thresholds of significance. Emissions from the operation of Well No. 3 and associated pipeline were determined to be negligible. Therefore, the impact related to air quality emissions from the construction and operation of Well No. 3 and the associated pipeline was found to be less than significant.

The previous environmental review process did not identify odor as an issue with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

4.1.4.2 2019 SEIS Impact Analysis

The 2019 SEIS provided further evaluation of the proposed project under the National Environmental Policy Act (NEPA). This evaluation was based on updated emissions estimates for the project, which are provided as Appendix C-2 to this SEIR. As described in more detail below, the SEIS concluded that the project would comply with all applicable NAAQS and no additional mitigation measures were provided.

4.1.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to air quality. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

Since the 2008 EIR/EIS was prepared, there have been changes to attainment designations, applicable regulations, plans or policies/management goals that affect air quality. The updated information, as described previously in this section and summarized below, is considered herein.

Attainment/Nonattainment Designations

The Imperial County portion of the Salton Sea Air Basin is currently designated nonattainment (moderate) for both the federal and state 8-hour Ozone standards. This has not changed since the 2008 EIR/EIS. The most recently adopted ozone attainment plan adopted by the ICAPCD is the 2017 Imperial County 2008 8-Hour Ozone SIP.

There were no defined attainment/nonattainment areas for $PM_{2.5}$ in 2008. In 2009, the USEPA designated a partial County area, the south central or valley area of Imperial County, as nonattainment (moderate) for the federal $PM_{2.5}$ standard. The 2018 Imperial County Annual $PM_{2.5}$ SIP requires reduction of $PM_{2.5}$ emissions by 5 percent each year until the standard is attained.

Since publication of the 2008 EIR/EIS, the ICAPCD achieved attainment of the federal and state PM_{10} standards and in 2018, both ICAPCD and CARB approved the Imperial County 2018 Redesignation Request and Maintenance Plan for PM_{10}.

Imperial County 2009 PM_{10} SIP and 2018 Redesignation Request and Maintenance Plan for PM_{10}

The ICAPCD adopted the 2009 PM_{10} State Implementation Plan (SIP) in August 2009 that developed fugitive dust control measures (Regulation VIII). The USEPA approved these Regulation VIII fugitive dust rules into the Imperial County portion of the California SIP in April 2013. The Regulation VIII fugitive dust rules (as updated) were based on the related 2005 Best Available Control Measure (BACM) analysis. Rules 800 – 805 of the Regulation VIII fugitive dust rules were included in the 2008 Final EIR/EIS. USG's operations are required to comply with these regulations as applicable and updated enforceable through the ICAPCD.

The ICAPCD and CARB approved the "Imperial County 2018 Redesignation Request and Maintenance Plan for PM10" in late 2018. This document revises the 2009 PM_{10} SIP and requests redesignation of the Imperial Valley Planning Area as attainment. The Imperial Valley Planning Area is currently designated as a Serious nonattainment area for the PM_{10} NAAQS but can be redesignated as attainment if, among other requirements, the USEPA determines that the NAAQS has been attained. A review of the PM_{10} monitoring data from 2014 through 2016 shows that, when excluding exceptional events (i.e., high wind driven dust storms), the Imperial Valley Planning Area did not violate the federal 24-hour PM_{10} standard.

Imperial County 2017 75 ppb 8-Hour Ozone SIP

The ICAPCD adopted the 2017 Ozone SIP in September 2017. This SIP is under review by the USEPA. The SIP shows through photochemical grid modeling and a weight of evidence analysis that, but for emissions emanating from Mexico, the control measures included in the SIP are adequate to attain the 2008 Ozone standard and maintain this status through the July 20, 2018, attainment date and into the future.

The ICAPCD is working cooperatively with counterparts from Baja California Department of Environmental Protection to implement emissions reductions strategies and projects for air quality improvements at the border. The two states strive to achieve these goals through local input from government officials and representatives from academia, environmental organizations, and the general public. The Imperial Valley-Mexicali Air Quality Task Force (AQTF) has been organized to address unique issues in the binational Mexicali/Imperial Valley air shed. This group promotes regional efforts to improve the air quality monitoring network, to inventory emissions, and to develop air pollution transport modelling, as well to create programs and strategies to improve air quality.

Permits

The Plant and Quarry operate within the jurisdiction of the ICAPCD under a Title V Operating Permit issued in accordance with the provisions of 40 CFR Part 70 and Rule 900 of the ICAPCD. Three active permits (Nos. 1992, 2456, and 2834) issued by the ICAPCD to operate stationary sources at the Quarry are incorporated into the Plant's and Quarry's Title V Operating Permit (V-2834). The V-2834 permit renewal application was submitted on April 18, 2016, and is currently under review by the ICAPCD for renewal purposes. Per ICAPCD Rule 115, permits issued by the ICAPCD shall require compliance with all applicable air pollution control regulations of federal, state, and local agencies. USG is required to comply with its Title V Operating Permit and all other applicable ICAPCD rules as amended.

New Information

Since 2008, air quality regulations promulgated by the County SIPs have substantially reduced the diesel emissions from the equipment in use at the Plant and Quarry compared with the equipment assessed in the 2006 Draft EIR/EIS. These regulations require the following:

- Limits vehicle idling to no more than five consecutive minutes at one location, requires a written idling policy, and requires a disclosure when selling vehicles (California Code of Regulations Title 13, Section 2485; 2004 as amended);
- Requires all vehicles to be reported to ARB (Using the Diesel Off-Road Online Reporting System, DOORS) and labeled;
- Restricts the adding of older vehicles into fleets starting on January 1, 2014; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS; i.e., exhaust retrofits).

Consequently, the 2019 SEIS updated the emissions estimates of all proposed components of the USG Expansion/Modernization Project, including the new water pipeline and electrical line for the Quarry water supply. Based on the updated criteria air pollutant emissions estimates for the operation of the Quarry under the proposed expansion, the 2019 SEIS found that the proposed project would not generate total annual emissions that exceed the CEQA thresholds of significance.

The 2019 SEIS also estimated the criteria air pollutant emissions from mobile and fugitive sources and found that the mobile and fugitive emissions from the USG Expansion/Modernization Project, including emissions from both Quarry and Plant sources (e.g., Quarry mobile sources, locomotive operation, and construction of the proposed Well No. 3 and associated pipeline), would not generate total annual emissions that exceed the CEQA thresholds of significance.

Significance Determination

Based on project revisions and changed circumstances that may create a new or increased significant impacts, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.1.4.4 Subsequent Environmental Analysis

Impact 4.1-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan

Quarry, Well No. 3, Pipeline

The ICAPCD’s 2017 8-Hour Ozone AQMD and 2017 PM_{10} SIP are the applicable air quality plans for the portions of the project that are located in Imperial County. Consistency with an air quality plan is determined by whether the project would hinder implementation of control measures identified in the air quality plans or otherwise interfere with state’s plans to attain and maintain applicable air quality standards, including as a result of unplanned population or employment growth.

The locations and proposed operations of the Quarry, Well No. 3, and associated pipeline would be substantively the same as that evaluated in the 2008 EIR/EIS. Thus, project emissions would be the same as those presented in the 2008 EIR/EIS. As stated previously, the 2008 EIR/EIS determined that project impacts would not exceed applicable ICAPCD thresholds of significance and would be less than significant.

Project emissions have actually been reduced compared to 2008 estimates due to advancements in fuel efficiency and control technologies. The proposed project changes would not result in any population or employment growth. Therefore, the proposed project would not conflict with or obstruct implementation of the ICAPCD air quality plans. The project would not result in any new or more severe impacts related to a conflict with the applicable air quality plans.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Viking Ranch Restoration Site

Emissions resulting from restoration of the Viking Ranch Restoration Site would be limited to short-term construction emissions and as demonstrated in Impact 4.1-2, would not exceed applicable thresholds. Furthermore, the proposed restoration activities would not include any development or otherwise result in growth and would not hinder implementation of the SDAPCD air quality plans.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

Emissions associated with preservation of the Old Kane Springs Preservation Site would be limited to regular maintenance truck trips and would be negligible. Thus, this project component would not hinder implementation of the SDAPCD air quality plans and would have no potential to cause unplanned growth.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.1-2: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard

The ICAPCD is currently designated nonattainment (moderate) for the federal and state 8-hour ozone standards and the federal $PM_{2.5}$ standard.

Quarry, Well No. 3, and Associated Pipeline

Under the Quarry expansion, excavation operations onsite would extend for approximately 80 years and Quarry production would increase from approximately 1.13 million tons per year to 1.92 million tons per year. Criteria air pollutant emissions associated with the Quarry operations include stationary sources, fugitive dust sources, and mobile sources.

As described previously, the 2008 EIR/EIS determined that particulate matter emissions at both the Quarry and the well site/pipeline alignment would not exceed applicable thresholds and no mitigation was required. The 2008 EIR/EIS further determined that Quarry exhaust emissions would be potentially significant and provided Mitigation Measures 3.6-1a through 3.6-1c.

A comparison of the emission estimates presented in the 2008 EIR/EIS and the 2019 SEIS indicate that air quality regulations promulgated by the County SIPs since 2008 have reduced overall emissions from both stationary and mobile sources at the Quarry. For example, CARB passed regulations in 2007 for In-Use Off-Road Diesel-Fueled Vehicles to reduce NOx, diesel PM, and other criteria pollutant emissions from diesel-fueled vehicles driving off road. These regulations as updated through 2018, have substantially reduced the diesel emissions from the equipment in use at the Quarry, compared with the equipment assessed in the 2008 EIR/EIS. These regulations require the following:

- Limits vehicle idling to no more than five consecutive minutes at one location, requires a written idling policy, and requires a disclosure when selling vehicles (California Code of Regulations Title 13, Section 2485; 2004 as amended);
- Requires all vehicles to be reported to CARB (using the Diesel Off-Road Online Reporting System, DOORS) and labeled;
- Restricts the adding of older vehicles into fleets starting on January 1, 2014; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS; i.e., exhaust retrofits).

The 2019 SEIS air quality evaluation updated mobile equipment emissions utilizing the current fleet of vehicles, the engine Tier levels, and similar hours of operations as estimated in the 2008 EIR/EIS. Table 4.1-4, "Estimated Air Pollutant Emissions (Quarry, Well No. 3, and Associated Pipeline) Existing Conditions and Proposed Conditions," presents both the emission estimates from the 2008 EIR/EIS ("existing") and the 2019 SEIS emission estimates based on the 2018 fleet emission factors ("proposed"). The "Emission Net Change" row is the net emission increase or decrease between the existing conditions (2008) and the proposed conditions (2019). As shown, with the exception of CO, project emissions of criteria air pollutants would be lower than previously estimated in the 2008 EIR/EIS. Table 4.1-4 also provides the ICAPCD's CEQA thresholds and states whether the net emissions exceed these thresholds. As shown, the 2019 SEIS emission estimates for the Quarry expansion, including development and operation of proposed Well No. 3 and associated pipeline, would not exceed the ICAPCD's thresholds.

Table 4.1-4
Estimated Air Pollutant Emissions (Quarry, Well No. 3, and Associated Pipeline)
Existing Conditions and Proposed Conditions (Tons per Year)

	NOx		**CO**		**PM_{10}**		**$PM_{2.5}$**		**VOC**	
Source	***Existing***	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***
Quarry Stationary Sources	--	--	--	--	108.36	56.99	22.54	11.85	--	--
Quarry/Plant Mobile Equipment/ Trucks	57.75	18.54	22.11	36.33	6.02	0.62	6.02	0.57	4.03	1.24
Haul/Access Roads (PM or dust only)	--	--	--	--	92.88	58.05	19.32	12.07	--	--
Fugitive Dust Plus Blasting Emissions	0.03	0.05	0.11	0.18	121.95	160.88	25.37	33.46	--	--

Source	**NOx**		**CO**		**PM_{10}**		**$PM_{2.5}$**		**VOC**	
	Existing	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***	***Existing***	***Proposed***
Onsite Vehicles	0.29	0.29	0.55	0.55	0.02	0.02	0.02	0.02	0.06	0.06
Emissions Totals	**58.07**	**18.88**	**22.77**	**37.06**	**329.23**	**276.54**	**73.27**	**57.97**	**4.09**	**1.30**
Emission Net Change	-39.19		14.29		-52.69		-15.3		-2.79	
CEQA Thresholds per ICAPCD	25		100		27		100		25	
Significant Impact?	**No**		**No**		**No**		**No**		**No**	

Source: BLM 2019 (Table 3.5-2 on page 3.5-8)

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.1.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *Mitigation Measures 3.6-1a*
  - *Mitigation Measures 3.6-1b*
  - *Mitigation Measure 3.6-1c*

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

Proposed restoration activities at the Viking Ranch site would include tree stump removal, grading, excavations, and revegetation of the site. These activities are expected to require the use of backhoes, a trencher, grader, dozer, and dump truck, as well as supply and water trucks. Once construction is completed, operational emissions would be limited to those associated with infrequent maintenance truck trips and would be negligible. Thus, the following analysis focuses on construction emissions.

According to the SDAPCD (2007), construction impacts predominantly result from two sources: (1) fugitive dust from surface disturbance activities, and (2) exhaust emissions resulting from the use of construction equipment. The predominant pollutant of concern during construction is particulate matter, since PM_{10} is emitted as windblown (fugitive) dust during surface disturbance, and as exhaust of diesel-fired construction equipment (particularly as $PM_{2.5}$). According to the 2021 HMMP (Dudek), fugitive dust may be generated during proposed berm demolition, filling of the diversion ditch, and site grading but would be minimized through water application for dust control during these activities. Other emissions of concern include other mobile combustion sources (on-road and off-road) associated with the project such as NO_x, SO_x, CO, PM_{10}, and $PM_{2.5}$.

The project's construction-related emissions were modeled using the California Emissions Estimator Model (CalEEMod), Version 2022 version 1.1.4 and are included as Appendix C-2. CalEEMod allows the user to enter project-specific construction information, such as types, number, and horsepower of construction equipment, and number and length of off-site motor vehicle trips. As shown in Table 4.1-5, "Estimated Air Pollutant Emissions (Viking Ranch) (Unmitigated)," construction emissions for the project would result in maximum daily emissions of approximately 24 pounds of NO_x, 25 pounds of CO, 5 pounds of PM_{10}, and 5 pounds of $PM_{2.5}$. As discussed in Section 4.1.4.1, above, the SDAPCD has established recommended screening level thresholds of significance for regional pollutant emissions. The project estimates of maximum daily emissions would not exceed the thresholds of significance recommended by the SDAPCD. Regardless, standard mitigation for fugitive dust construction combustion equipment emissions would be required per Mitigation Measures 4.1-1a and 4.1-1b, below.

Table 4.1-5
Estimated Air Pollutant Emissions (Viking Ranch) (Unmitigated)

Construction Phase	NOx^1	CO^1	$SO_2{}^1$	$PM_{10}{}^1$	$PM_{2.5}{}^1$
Site Preparation (2024)	17	16	<0.1	5	3
Grading (2025)	24	25	<0.1	5	3
Grading (2026)	21	24	<0.1	5	3
CEQA Thresholds per SDAPCD	250	550	250	100	55
Significant Impact?	No	No	No	No	No

Source: Benchmark Resources 2023
Notes:
1. Pounds (lbs) per day

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: *Implement the following newly proposed mitigation measure:*

Mitigation Measure 4.1-1a: *The following standard mitigation measures for fugitive PM_{10} control shall be implemented throughout project construction activities:*

a. *All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.*
b. *All on site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*
c. *All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*
d. *The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.*
e. *All track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.*
f. *Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at point of transfer with application of sufficient water, chemical stabilizers or by sheltering or*

enclosing the operation and transfer line.

g. *The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.*

Mitigation Measure 4.1-1b: *The following standard mitigation measures for construction combustion equipment shall be implemented throughout project construction activities:*

a. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.*
b. *Minimize idling time either by shuttling equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*
c. *Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.*
d. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

Level of Significance After Mitigation: Less than significant.

Old Kane Springs Road Preservation Site

The project does not propose any construction activities or regular use of the Old Kane Springs Road Preservation Site. Emission sources would be limited to infrequent maintenance truck trips and would result in negligible emission levels.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.1-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations

Determination of whether project emissions would expose sensitive receptors to substantial pollutant concentrations is a function of assessing potential health risks. Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors. When evaluating whether a project has the potential to result in localized impacts, the nature of the air pollutant emissions, the proximity between the emitting facility and sensitive receptors, the direction of prevailing winds, and local topography must be considered.

Quarry, Well No. 3, and Associated Pipeline

The area surrounding the Quarry, well site, and proposed pipeline alignment is generally vacant, rural desert land with no sensitive receptors located within one mile of the project site. Thus, the project would not be expected to expose any sensitive receptors to substantial concentrations of pollutants. Regardless, the 2008 EIR/EIS assessed potential health risks associated with air emissions (see 2008 EIR/EIS Impacts 3.6-1 through 3.6-7). The 2008 EIR/EIS concluded that the project's estimated emissions would be below applicable ICAPCD significance thresholds and would be further reduced by existing regulations, such as CARB's comprehensive Diesel Reduction Plan, and by mitigation measures provided in the 2008 EIR/EIS, such as Mitigation Measures 3.6-1a through -1c.

As described previously, a comparison of the emission estimates presented in the 2008 EIR/EIS and the 2019 SEIS indicate that air quality regulations promulgated by the County SIPs since 2008 have reduced overall emissions from both stationary and mobile sources at the Quarry. Thus, the project would not result in any new impacts or worsen any existing impacts related to exposure of sensitive receivers to substantially pollutant concentrations.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Viking Ranch Restoration Site

The Viking Ranch Restoration Site is located at the edge of a small clustering of agricultural fields that is surrounded by open space of the Anza-Borrego Desert. There are no schools, hospitals, nursing homes or other known sensitive receptors within one half mile of the Viking Ranch Restoration Site. Within one mile, there are several small, isolated clusters of development among the surrounding agricultural fields to the west and south which may include some residences or farm worker housing. However, given that the project's estimated emissions would be below SDAPCD significance thresholds and their distance from the Viking Ranch site, these potential sensitive receptors would not be exposed to substantial pollutant concentrations.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

The Old Kane Springs Road Preservation Site would be preserved in its existing conditions. No construction or development is proposed at this site. Operation of the site would require only infrequent maintenance truck trips which were determined to generate negligible criteria air pollutants. This portion of the project would have no potential to expose sensitive receptors to substantial pollutant concentrations.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.1-4: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People

Project activities are not expected to introduce significant sources of odors. The project does not involve odor-generating sources aside from direct exhaust emissions associated with Quarry operations and restoration activities that generally dissipate rapidly into the atmosphere as distance increased from the source. Furthermore, ICAPCD has not adopted construction-related thresholds of significance for odors. ICAPCD's operational threshold of significance is five confirmed odor complaints per year average other three years. There have been no such complaints against the Quarry.

The ICAPCD CEQA Guidelines (2017) provide screening distance criteria for a variety of land uses that have the potential to generate odors, such as wastewater treatment facilities, landfills, composting stations, feedlots, asphalt plants, and rendering plants. The proposed project does not involve installation or operation of any of the land use categories that might be expected to generate odors.

The project's potential odor impacts are less than significant based on the nature of project activities, ICAPCD's odor screening criteria, and ICAPCD's record of complaints for the existing asphalt concrete plant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

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BIOLOGICAL RESOURCES

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SECTION 4.2:
BIOLOGICAL RESOURCES

This section of the draft subsequent environmental impact report (Draft SEIR) documents potential impacts of the project on biological resources, including special-status plants, wildlife, and invertebrate species and their habitat.

The information in this section is based on the following biological technical studies which were previously prepared to support the 2008 EIR/EIS and 2019 SEIS, as well as a habitat mitigation and monitoring plan prepared for the offsite mitigation sites:

- *Biological Resources Technical Report: United States Gypsum Company Expansion and Modernization Project* (Aspen Environmental Group 2019) (Appendix D-1, "SEIS Biological Resources Technical Report")
- *Jurisdictional Delineation for United States Gypsum Company Plaster City Expansion/Modernization Project* (Hernandez Environmental Services 2016) (Appendix D-2, "2016 Jurisdictional Delineation")
- *Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California* (United States Fish and Wildlife Service 2019) (Appendix D-3, "Biological Opinion")
- *Draft Habitat Mitigation and Monitoring Plan for the United States Gypsum Company Plaster City Expansion/Modernization Project, Ocotillo Wells, California* (Dudek 2021) (Appendix D-4, "Draft Habitat Mitigation and Monitoring Plan")

4.2.1 Environmental Setting

This section discusses the existing biological resources conditions within and adjacent to the project site at both the time the 2008 EIR/EIS was prepared and at present. Methods for evaluating site conditions, including literature review and field surveys, are discussed first, which is followed by a description of the habitat types and species composition on the project site and each of the off-site mitigation sites.

4.2.1.1 Regional Setting

The project site and Imperial County are in the Colorado Desert, the California portion of the larger Sonora Desert which encompasses lands around the Gulf of California and the delta of the Colorado River, including northwestern Mexico, southwestern Arizona, southeastern California (US) and Baja California (Mexico). The dominant physical feature of the Colorado Desert is the Salton Trough, an elongated depression that is separated from the Gulf of California by the Colorado River delta and extends northerly to the San Gorgonio Pass, north of Palm Springs. The dominant hydrologic feature is the Salton Sea located in the lowest portion of the Salton Trough. The Colorado Desert extends from the Colorado River westerly to the base of the Peninsular Ranges in western Imperial County/Eastern San Diego County. The Quarry site is located in the Fish Creek Mountains at the eastern base of the Peninsular Ranges.

Vegetation in the arid Colorado Desert is sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Franseria ilicifolia*), burrobush (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), smoketree (*Psorothamnus spinosus*) as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*).

Despite its harsh environment, the Colorado Desert supports a diverse wildlife population including both resident and migratory species of reptiles, birds, invertebrates, and mammals. Common wildlife include mule deer, bobcat, desert kangaroo rate, cactus mouse, black-tailed jackrabbit, Gambel's quail, and red-diamond rattlesnake. The vegetation described above also supports a variety of special-status wildlife species including Peninsular bighorn sheep, desert pupfish, flat-tailed horned lizard and barefoot banded gecko.

4.2.1.2 Biological Resource Conditions at the Time of the 2008 EIR/EIS

The following discussion is based entirely on the analysis provided in the 2008 EIR/EIS and its appendices which include a Biological Technical Report prepared in 2005 by White & Leatherman BioServices for the Quarry.

Vegetation

At the time the 2008 EIR/EIS was prepared, three special-status plant communities had been reported in the area by the California Natural Diversity Data Base (CNDDB): desert fan palm oasis, mesquite bosque, and transmontane alkali marsh.

Two biological field surveys had been conducted for the Quarry site at the time the 2008 EIR/EIS was prepared: the first by Lilburn Corporation in 1995, and the second by White & Leatherman BioServices in 2002. During these surveys, no special-status plants were observed at the Quarry, at the Well No. 3 site, or along the pipeline alignment (Imperial County 2006).

Wildlife

Based on literature reviews conducted for the 2008 EIR/EIS, biologists identified 27 special status species occurring or potentially occurring in the general region of the Quarry site. Of these, four were state- or federally-listed threatened or endangered species in 2008—desert pupfish (*Cyprinodon macularius*), desert tortoise (*gopherus agassizii*), barefoot banded gecko (*Coleonyx switaki*), and peninsular bighorn sheep (*Ovis canadensis*)—and one, flat-tailed horned lizard (FTHL) (*Phrynosoma mcallii*), is a special status wildlife species protected by an interagency management agreement. The 2008 EIR/EIS determined there was no potential for desert pupfish to occur on the site due to the absence of any perennial surface water. Neither desert tortoise nor barefoot banded gecko was observed during site surveys and were determined by project biologists to be unlikely to occur on the project site. Portions of the Quarry are located within the critical habitat for Peninsular big-horned sheep. However, the 2008 EIR/EIS determines that as the Quarry and adjacent mountains have no permanent or long-lasting seasonal water source they do not serve as habitat for peninsular bighorn sheep. The 2008 EIR/EIS concluded that FTHL is likely to occur along the narrow-gauge railroad right-of-way as well as other habitat types. There have been several sightings near the proposed pipeline alignment as it traverses the West Mesa Management Area.

The 2008 EIR/EIS also identified a low probability for the occurrence of three special status invertebrate species: Carlson's dune beetle (*Anomala carlsoni*), Hardy's dune beetle (*A. hardyroum*), and Andrew's dune scarab beetle (*Pseudocotalpha andrewsi*).

Numerous bird species were either observed during site surveys or have the potential to occur on the site due to geographic range and presence of suitable habitat. These include two special status birds – black tailed gnatcatcher (*Polioptila melanura*) and loggerhead shrike (*Lanius ludovicianus*) which were observed onsite during the 2002 site survey. Several raptor species, including the golden eagle and prairie falcon, are likely to occur during winter or migration and potential habitat is present for burrowing owls.

The 2008 EIR/EIS also identified several special status bat species likely to forage and/or roost on the site including pallid bat (*Antrozous pallidus*), California mastiff bat (*Eumops perotis californicus*), and California leaf-nosed bat (*Macrotus californicus*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), spotted bat (*Euderma maculatum*), and Townsend's big-eared bat (*Plecotus townsendii pallescens*). No significant potential roosting sites were observed on the site during surveys.

American badger was also determined to be likely to occur on the Quarry site at least occasionally but are unlikely to live on the site year-round (Imperial County 2006).

4.2.1.3 Biological Resource Conditions at Present

The following discussion of biological resource conditions at the Quarry, Well No. 3 site, and associated pipeline alignment is based on the Biological Resources Technical Report prepared by Aspen Environmental Group in 2019 (Appendix D-1), the Jurisdictional Delineation prepared by Hernandez in 2016 (Appendix D-2), and the Biological Opinion issued by USFWS in 2019 (Appendix D-3). The discussion of biological resource conditions at the off-site mitigation sites is based on the Habitat Mitigation and Monitoring Plan (HMMP) prepared by Dudek in 2021 (Appendix D-4).

Quarry, Well No. 3 and Associated Pipeline

Vegetation Types

According to Aspen (2019), the Quarry area is characterized by broad sandy wash and adjacent upland slopes and mountains. The wash slopes gently toward the northwest and is fed by several canyons in the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest). The wash is vegetated by several types of wash shrubland, and woodland as described below. The uplands are also vegetated by a variety of shrubland types. A total of seven vegetation types were mapped within the project area. Other land cover types including sparsely vegetated sandy wash and existing development were also mapped within the project area. Vegetation and cover types within the project area are described in the following paragraphs and mapped on Figure 4.2-1, "Project Site Vegetation and Landcover."

Creosote bush scrub

Creosote bush scrub is an upland vegetation type that is characterized by creosote bush (*Larrea tridentata*) which is the dominant shrub. Other species such as dyebush (*Psorothamnus emoryi*), desert straw (*Stephanomeria pauciflora*), and indigo bush (*Psoro-Thamnus schottii*) are also present but in much lower numbers. It is most common in the uplands along the northwest portion of the project site.

Creosote bush–white bursage scrub

Creosote bush–white bursage scrub is an upland vegetation that is characterized by creosote bush and white bursage (*Ambrosia dumosa*) which co-dominate these areas. Several other species are present in these areas including (*Condea emoryi*), desert straw, ocotillo (*Foquieria splendens*), and three species of cholla (*Cylindropuntia spp.*). Scattered catclaw (*Senegalia greggii*) are also present in some of the smaller upland swales that originate in these areas and eventually change to catclaw acacia thorn scrub further downstream.

Catclaw acacia thorn scrub
Catclaw acacia thorn scrub is a wash vegetation that is dominated by catclaw. Other species such as desert lavender, smoke tree (*Psorothamnus spinosus*), cheesebrush (*Ambrosia salsola*), and sweetbush (*Bebbia juncea*). It is most common in the upper washes and in more isolated portions of the main wash that are slightly protected from scouring flows.

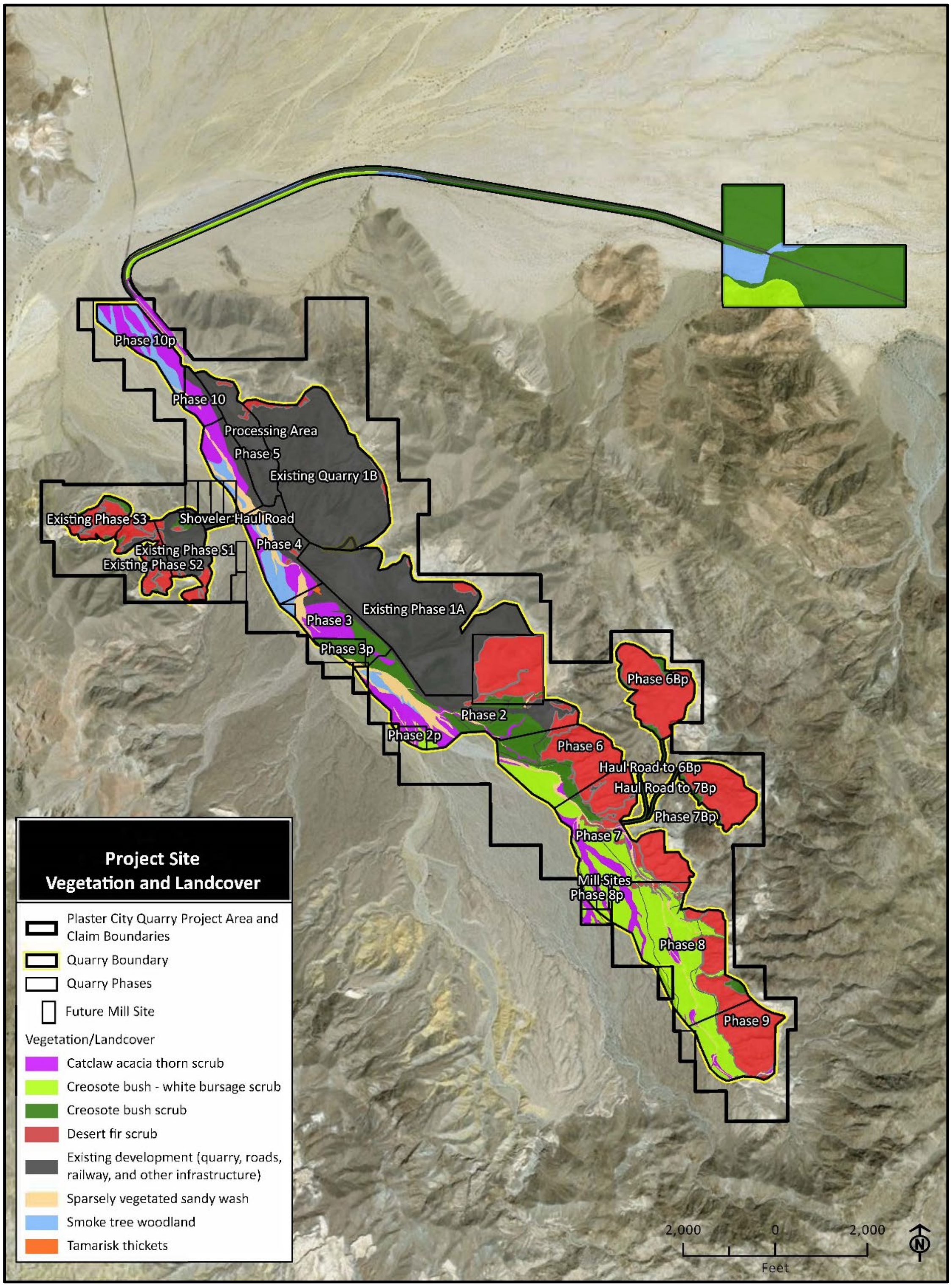
Smoke tree woodland
Smoke tree woodland is a wash vegetation that is dominated by smoke trees. Other species such as desert lavender, indigo bush, catclaw, desert willow (*Chilopsis linearis*), and cheesebrush (*Ambrosia salsola*) are also present. Several desert ironwood (*Olneya tesota*) were also present within the smoke tree woodlands along the Ocotillo pipeline alignment. It is most common in the large wash that flows through the lower elevations within the project site. It grows in the most active portion of the wash that is frequently scoured. Some areas mapped as smoke tree woodland have very little vegetative cover, primarily because of scouring floods that hit the area in 2014. Many of the dominate trees and shrubs survived but were buried or knocked over and are continuing to recover. Smoke tree woodland is ranked by CDFW as a sensitive natural community (CDFW 2010).

Desert fir scrub
Desert fir scrub is an upland vegetation type that grows on the gypsum outcrops within the project area. It is dominated by desert fir (*Peucephyllum schottii*) with other species such as flat-topped buckwheat (*Eriogonum plumatella*), and creosote bush also present but in much lower numbers. The areas mapped as this vegetation type do not match any of the vegetation types named or described in A Manual of California Vegetation (Sawyer et al. 2009, cited in Aspen 2019). Therefore, Aspen biologists named it to best match the naming convention used in Sawyer et al (2009).

Allscale scrub
Allscale scrub is dominated by allscale (*Atriplex polycarpa*) and is present along the Ocotillo pipeline alignment. It grows on fine sandy soils and old playalike habitats near the community of Ocotillo. Other species such as cheesebrush, dyebush, creosote bush, white bursage, and big galleta (*Hilaria rigida*). Fine wind-blown sands are present in several areas along the Ocotillo pipeline.

Tamarisk thickets
Tamarisk thickets was used to map one patch of vegetation dominated by saltcedar (*Tamarix ramosissima*) and athel tamarisk (*Tamarix aphylla*). Tamarisk thickets are present in a single location within the project area where flood waters in 2014 ponded and allowed these species to flourish.

Sparsely vegetated sandy wash
Sparsely vegetated sandy washes are present within the quarry, the northern pipeline alignments and along the Ocotillo pipeline alignment. It is used to map areas that are largely unvegetated washes with scattered shrubs such as sweetbush and cheesebrush. Seedling trees such as smoke tree and desert ironwood may be present but in very low numbers. These washes have a high abundance of spring annuals.



SOURCE: Aspen 2019; Figure 2
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Figure 4.2-1
Project Site Vegetation and Landcover

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Special Status Plant Species

Table 3 of Appendix D-1 lists the 39 special-status plant species reported within the USGS 7.5-minute quads surrounding the project site. One of these species, San Diego button-celery (*Eryngium aristulatum* var. *parishii*) is both state and federally listed as endangered.

Six plants recognized by the BLM as sensitive have at least some potential to be present within the project site. Of these, none were observed and only two species, chaparral sand verbena (*Albronia villosa* var. *aurita*) and Orcutt's aster (*Xylorhiza orcuttii*), have at least a moderate potential to be present and are discussed below (Aspen 2019).

Annual rock-nettle (*Eucnide rupestris*) is recognized by the CNPS as a California Rare Plant. This species was observed on the project site in the southeastern phases of the Quarry. The locations of field observations of Annual rock-nettle are shown on Figure 4.2-2, "Project Site Biological Resources." These and other species with at least a moderate potential to be present on the project site are described below.

Listed Threatened and Endangered Plant Species

San Diego button-celery

This plant occurs only in vernal pools in San Diego, Orange, and Riverside counties, inland as far as the In-Ko-Pah Gorge area. It is considered absent from the project site due to the lack of any suitable vernal pool habitat (Aspen 2019).

BLM Sensitive Plants

Chaparral sand verbena

Chaparral sand verbena is a BLM sensitive species and has a CRPR of 1B.1. It is a perennial herb in the four o'clock (*Nyctaginaceae*) family. It grows in the western Sonoran Desert, San Jacinto Mountains, and coastal sides of southern California mountains (CNPS 2018, cited in Aspen 2019). In the desert, it is found in desert shrublands on dunes, sandfields, and sandy washes. Chaparral sand-verbena is an annual or perennial herb that tends to integrate with the common desert sand-verbena (*A. villosa* var. *villosa*). Its distribution and identification are unclear in published reference works. The conservation concern is primarily for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert where the variety is considered rare (Roberts et al. 2004, cited in Aspen 2019).

Chaparral sand verbena was not observed within the project site during focused surveys, which were conducted during two years with below average rainfall. It has a moderate potential to be present along the northern pipeline alignment following a year with higher-than-average rainfall.

Orcutt's aster

Orcutt's aster is a BLM sensitive species and has a CRPR of 1B.2. It is a woody perennial in the aster (Asteraceae) family that blooms from March to April. It grows in the western Sonoran Desert from the Salton Sea in the east to Anza Borrego State Park in the west, north to near Salton City and south to near Interstate 8. It is a woody perennial that is present year-round and flowers in the spring. It is most commonly found in arid canyons and nearly barren slopes in areas vegetated by creosote-bush scrub (Baldwin et al. 2012, cited in Aspen 2019). Several of the records also note that it grows on sandy, clay, alkali, and gypsum substrates (CNPS 2018, cited in Aspen 2019).

Orcutt's aster was not observed during focused surveys of the project site. It has a moderate potential to be present within all three components of the project site as a waif from upstream populations that are known to occur within 0.75 miles of the project site.

Other Special-status Plant Species

Several other special-status plant species ranked by CNPS and CDFW have at least a moderate potential to be present. These include several plants ranked as a CRPR 2 species and CRPR 4 species. These species, with at least a moderate potential to be present, are described below.

Annual rock-nettle

Annual rock-nettle (*Eucnide rupestris)* has a CRPR of 2B.2. It is an annual herb in the stick-leaf (*Loasaceae*) family and blooms from December through April. It is found in Sonoran Desert scrub at elevations from about 400 to 2,000 feet in California (Imperial and San Diego counties), Arizona, and northern Mexico. In California, it has been documented growing on gypsum soils. However, further south into Mexico it does not seem to show any soil affinity and has been observed on volcanic soils as well as more typical granitic substrates (SEINET 2018, cited in Aspen 2019).

Annual rock-nettle was observed within the project during focused surveys. Dozens of plants were growing on eroded gypsum cliffs, in adjacent gypsum bedrock, and downstream in sandy washes. All observations were in the southeastern phases of the quarry including Phases 6 through 9. Additional plants are not expected in other portions of the project site.

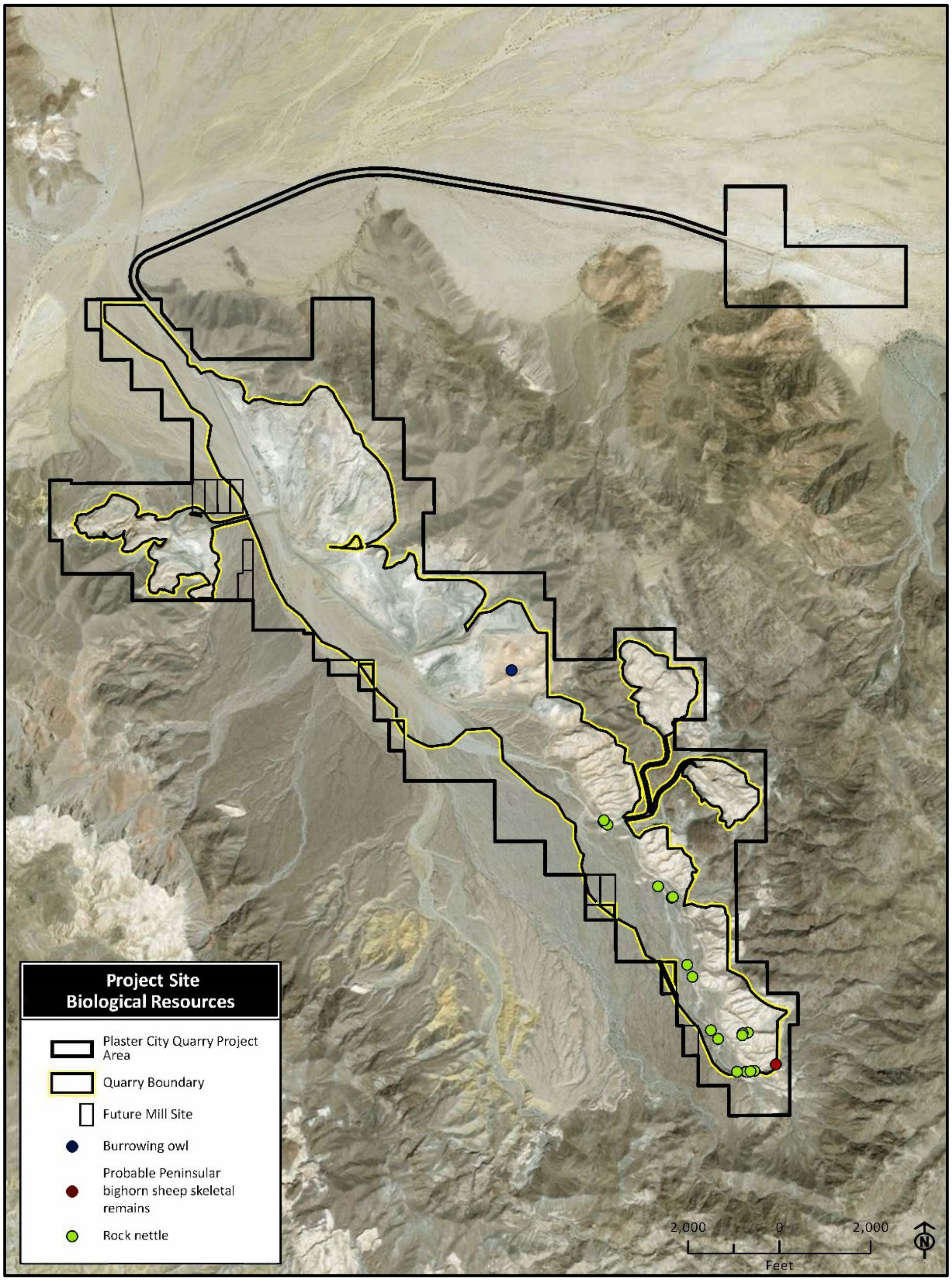
Harwood's milk vetch

Harwood's milk vetch (*Astragalus insularis var. harwoodii*) has a CRPR of 2B.2. It is an annual herb in the pea (Fabaceae) family that blooms from March to April (CNPS 2018, cited in Aspen 2019). It grows in sandy, windblown soils throughout much of the western Sonoran Desert from near Anza Borrego State Park in the south, to the Whipple Mountains in the north and east into Arizona (CDFW 2018, cited in Aspen 2019). It is an annual that requires adequate rainfall to trigger germination. It is known from several records in the immediate vicinity of the existing pipeline near Plaster City and was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH 2018 and Calflora 2018, cited in Aspen 2019).

Harwood's milk vetch was not observed during focused surveys of the project area, which were conducted during two years with below average rainfall. It has a high potential to be present in fine sand accumulations within all three components of the project area in a year with higher-than-average rainfall.

Brown turbans

Brown turbans (*Malperia tenuis*) has a CRPR of 2B.3. It is an annual herb in the aster (Asteraceae) family and blooms from February through April (CNPS 2018, cited in Aspen 2019). It is found in sandy or gravelly areas of Sonoran Desert scrub at elevations from about 50 to 1,100 feet in California (Imperial and San Diego counties) and Baja California, Mexico. It is known from numerous locations in the vicinity of the project area (CCH 2018, cited in Aspen 2019).



SOURCE: Aspen 2019; Figure 3
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Figure 4.2-2
Project Site Biological Resources

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Dozens of plants were observed within Phases 7 through 9, primarily on rocky slopes and flats adjacent to the sandy washes. Several plants were also observed along the proposed pipeline near the entrance gate to the quarry. Additional plants are likely to be present in similar habitats within the project area in a year with higher-than-average rainfall. It also has a high potential to be present along the existing pipeline although it was not observed during the surveys.

Hairy blazingstar

Hairy blazingstar (*Mentzelia hirsutissima*) has a CRPR of 2B.3. It is an annual herb in the stick-leaf (*Loasaceae*) family and blooms from March to May (CNPS 2018, cited in Aspen 2019). It is found on rocky substrates and talus in the Sonoran Desert at elevations up to about 2,000 feet in California (Imperial and San Diego counties) and in Baja California, Mexico. It was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH 2018 and Calflora 2018, cited in Aspen 2019).

Hairy blazingstar was not observed during the focused surveys of the project area, which were conducted during two years with below average rainfall. It has a high potential to be present within the Quarry and along the proposed pipeline alignment in a year with higher-than-average rainfall.

Narrow-leaf sandpaper-plant

Narrow-leaf sandpaper-plant (*Petalonyx linearis*) has a CRPR of 2B.3. It is a shrub in the stick-leaf *(Loasaceae*) family and blooms from March to May (CNPS 2018, cited in Aspen 2019). It is found on sandy and rocky substrates in a variety of habitats throughout the Sonoran Desert. It was documented on gypsum soil in 2015 just south of the project area. Narrow-leaf sandpaper-plant was reported from the project area in an earlier report (White and Leatherman 2005, cited in Aspen 2019) although it was not observed during the recent surveys and may no longer be present. It has a high potential to be present in the quarry and has a moderate potential to be present within the proposed pipeline alignment.

Four special-status plants with a California Rare Plant Rank (CRPR) of 4 were observed during the surveys: winged cryptantha (*Cryptantha holoptera*), Wolf's opuntia (*Cylindropuntia wolfii*), Thurber's pilostyles (*Pilostyles thurberi*), and Coulter's lyrepod (*Lyrocarpa coulteri*). Winged cryptantha and Coulter's lyrepod were both observed at several locations in the upper wash within Phases 6 through 9. Dozens of Wolf's opuntia were observed on upland terraces within Phases 7 through 9. Thurber's pilostyles were observed growing on dyebush along the proposed pipeline.

Four additional special-status plants with a CRPR of 4 have at least a moderate potential to be present: Salton milkvetch (*Astragalus crotalariae*), ribbed cryptantha (*Cryptantha costata*), Utah vine milkweed (*Funastrum utahense*), and slender-lobed four o'clock (*Mirabilis tenuiloba*). These plants are ranked as CRPR 4 species (i.e., a "watch list," not indicating rarity) and none are listed as threatened or endangered.

Special Status Wildlife Species

Table 4 in Appendix D-1 lists the special-status wildlife species reported within the USGS 7.5-minute quads surrounding the project site. The state and federally listed Peninsular bighorn sheep is present in the area. Two candidates for state listing, flat-tailed horned lizard, and Townsend's big-eared bat, may also occur. Loggerhead shrike, San Diego desert woodrat, and burrowing owl, all California Species of

Special Concern, have been observed on the project site. The locations of field observations of burrowing owl and peninsular bighorn sheep remains are shown on Figure 4.2-2. These and other species with at least a moderate potential to be present on the project site are described below.

Listed Threatened or Endangered Wildlife

Peninsular bighorn sheep

The Peninsular bighorn sheep (*Ovis canadensis nelsoni* DPS) (PBS) is federally listed as endangered, State-listed as threatened and designated as a "fully protected animal" by the California Fish and Game Code. Under the federal Endangered Species Act listing (USFWS 2009, cited in Aspen 2019) “Peninsular bighorn sheep” refers to the regional Distinct Population Segment (DPS) of desert bighorn sheep (or Nelson’s bighorn sheep). Under the 1971 California Endangered Species Act listing, Peninsular bighorn sheep refers to the subspecies Ovis canadensis cremnobates, although that subspecies is no longer recognized in more recent literature. Regardless of nomenclature, both listing designations refer to the same animals: the bighorn sheep population found in the Peninsular Ranges of southern California and southward into Baja California. This population is recognized as genetically isolated from other populations located farther to the north and east. PBS inhabit the desert slopes of the Peninsular ranges from Riverside County south to Baja California, Mexico, including the Fish Creek Mountains, where the Plaster City Quarry is located. PBS biology, life history, and conservation status are described by the US Fish and Wildlife Service (USFWS 2011a, cited in Aspen 2019) in its 5-year review. A few key aspects of its life history are seasonal movements and habitat use, reliance on surface water availability, and metapopulation geography.

The decline of PBS is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses associated with residential and commercial development; and high predation rates.

The USFWS (2000, cited in Aspen 2019) has prepared a Recovery Plan for PBS, identifying 9 Recovery Regions, extending from the northernmost Recovery Region 1 on the desert-facing slopes of the San Jacinto Mountains (about 50 miles north of the Plaster City Quarry), to the southernmost Recovery Region 9 extending from the Coyote Mountains (about 10 miles south of the quarry expansion area) south to the international border (the range of the animals within Recovery Region 9 extends southward through the Coyote Mountains, across Interstate 8, and across the international border into Mexico). The Plaster City Quarry is located within Recovery Region 8 (Vallecito Mountains). The estimated numbers of Peninsular bighorn sheep in Recovery Regions 8 and 9 increased during the period from 1998 to 2016 (USFWS 2011a; Colby and Botta 2017, cited in Aspen 2019). CDFW (Colby and Botta 2017, cited in Aspen 2019) estimated the Region 8 and Region 9 populations at 163 and 256 animals, respectively.

The behavioral response of desert bighorn sheep (including PBS) to human activity is considered to be highly variable and dependent upon many factors, including: (1) the type of activity, (2) an animal’s previous experience with humans, (3) size or composition of the bighorn sheep group, (4) location of the bighorn sheep relative to elevation of the activity, (5) distance to escape terrain, and (6) distance to the activity (USFWS 2011a, p. 14, cited in Aspen 2019). Responses can range from cautious curiosity to immediate flight or abandonment of habitat, as well as disruption of normal social patterns and resource use. In some cases, Nelson’s bighorn sheep have become acclimated to quarrying activities. For example, in local resident Nelson's bighorn sheep the northern San Bernardino Mountains have become acclimated to limestone quarrying and make regular use of inactive quarries and even active quarries during inactive hours (personal observations and communications with quarry staff by Scott D. White).

There are several research publications on Nelson's bighorn sheep activity in the vicinity of mining operations. None of these papers addresses PBS; however, the following three address Nelson's bighorn sheep populations in arid habitats in California or Arizona that are comparable to the Plaster City Quarry site. The summary that follows is based on these three publications, particularly the discussion by Bleich and coauthors (2009, cited in Aspen 2019), which is the most recent of the three, comparing and contrasting their own study results with the others and with broader Nelson's bighorn sheep literature.

- Panamint Mountains, California (Oehler et al., 2005)
- Silver Bell Mountains, Arizona (Jansen et al., 2007)
- San Bernardino Mountains, California (Bleich et al., 2009)

Bleich and coauthors (2009, cited in Aspen 2019) state that "the characteristic that best defines mountain sheep habitat is the presence of escape terrain," and that many habitat studies have found that juxtaposition of escape terrain with valuable water or food sources has been important. They identify potential mining-related habitat benefits and deterrents, as follows: Mining can enhance escape terrain by removing vegetation (i.e., improving visibility) and creating steeper topography, especially if the improved escape terrain is near valuable food or water sources. However, mining-related disturbance could outweigh the benefits of improved escape terrain if it causes sheep to avoid the quarry areas. They found that Nelson's bighorn sheep in the San Bernardino Mountains limestone mining areas generally avoided roads (human disturbance) but did not avoid mined areas and in fact favored them over random locations.

Bleich and coauthors (2009, cited in Aspen 2019) cite several publications indicating that Nelson's bighorn sheep can habituate to disturbance, and are frequently observed on or near active mines, stating "we speculate that such disturbance is of minimal concern to sheep when it is consistent in nature and occurs in highly predictable locations." In the Panamint Mountains study, Oheler and coauthors found that proximity to active mining did not affect home ranges, diet composition, or demographic indices, and that Nelson's bighorn sheep activity in the mining area was not affected by frequency of blasting or mine productivity.

The USFWS designated critical habitat for PBS in 2009. Much of the proposed Quarry expansion area, as well as the southern and western currently active quarry areas, are within designated critical habitat (see Figure 4.2-3, "Peninsular Bighorn Sheep Critical Habitat"). In its critical habitat designation, the USFWS (2009, cited in Aspen 2019) described "primary constituent elements" (PCEs) essential to the conservation of Peninsular bighorn sheep. The 5 PCEs are paraphrased below:

- Moderate to steep, open slopes and canyons, that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups;

- Presence of a variety of forage plants, including shrubs that provide a primary food source year-round, grasses, and cacti that provide a source of forage in the fall, and forbs that provide a source of forage in the spring;
- Steep, rugged, slopes (60 percent slope or greater) that provide secluded space for lambing and terrain for predator evasion;
- Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (e.g., foraging areas and escape terrain); and
- Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water.

On the whole, the USG claims and the surrounding slopes and canyon provide all PCEs identified above. Intermittent or permanent water is available from a natural rock tinaja water source located in the Fish Creek Mountains south of the Quarry. Several additional water sources are located about one to three miles west of the Quarry, within Anza Borrego Desert State Park (Colby and Botta 2017, cited in Aspen 2019).

Open slopes and canyons, as well as steep rugged slopes, are largely found above or in between the active quarry areas and the gypsum deposits proposed for future quarrying. Alluvial fans and washes, recognized as important foraging areas, are found throughout the area, including the large unnamed alluvial wash where below-grade quarrying would occur.

The proposed Quarry expansion would take place on two landforms: gypsum outcrops located above the level of the alluvial wash, and below-grade gypsum deposits, located beneath the alluvial wash. The planned expansion areas are located within larger claims, which also include more extensive upland and alluvial topography. In terms of the PCEs, the gypsum outcrops provide limited habitat value because of their sparse vegetation cover and minimal plant species diversity (predominantly desert fir, which is not identified as a PBS food plant). In addition, the surfaces of the undisturbed outcrops are covered by a crusted clay material that collapses underfoot, possibly affecting its habitat value for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups (the first PCE).

The existing alluvial wash habitat located in the expansion areas planned for below-grade mining provides the high diversity of food plants identified in the second and fourth PCEs and may provide habitat connectivity within the canyon (per the fourth PCE), although most evidence of PBS movement in the area is found on the steep slopes and ridges, rather than in the canyon.

CDFW conducts regular monitoring of radio-collared Peninsular bighorn sheep throughout the area. The annual reports identify several “ewe groups” within each Recovery Region; each ewe group comprises a few adult female Peninsular bighorn sheep and their offspring. There are four identified ewe groups in Recovery Region 8 (Colby and Botta 2017, cited in Aspen 2019). The Quarry is located between the mapped home ranges of Vallecito Mountains ewe group and the Fish Creek Mountains ewe group. Suitable and occupied PBS habitat occurs to the west, northwest, south, and east of the Quarry, but not to the north. CDFW radio collar data provided by R. Botta (see Figure 4.2-4, “Fish

Creek Mountains Radio Collared Ewe Locations") show numerous PBS occurrences around the Quarry, around Split Mountain (west of the Quarry) and the Fish Creek Mountains (east, south, and southeast of the Quarry).

Ewes with young lambs have been reported within about one mile of the project site.

The existing Quarry and planned expansion areas are located along the eastern (Phases 1 through 10) and western (Phases S1, S2, and S3) slopes above a broad alluvial wash between the home ranges of two ewe groups whose core ranges are in the steeper mountains to the east and west. The two home ranges are in steep topography above the active quarry and planned expansion areas. At the narrowest point the overlap where the two ewe groups share territories (and, thus, biological connectivity) is about 4,000 feet wide, ranging in elevation between about 800 and 1,800 feet above MSL, with a few peaks above 2,100 feet above MSL. The existing Quarry and planned expansion area may limit potential east west movement across the canyon, although the animals seem to avoid the canyon floor (even to the south of the active Quarry area). Proposed Quarry development would not prevent continued geographic contact between the two ewe groups south of the planned Quarry expansion areas.

Peninsular bighorn sheep give birth mainly in late winter through early spring (February - April). Lambing is the period from one month before birth until weaning (at about 4 to 6 months of age). Births can occur over much of the winter or spring, so lambing activity can extend from January through August, but lambing season is generally identified as the period from 1 January through 30 May. During pregnancy and lactation, ewes require high-protein forage, as found on deeper more productive soils of alluvial fans and canyon bottoms but retreat to better escape terrain late in pregnancy and to give birth.

Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. The Fish Creek Mountains surrounding the project site provide suitable habitat components for lambing habitat and appear to be used by radio-collared females (ewes) during lambing season.

Peninsular bighorn sheep also occasionally move across valleys (not generally considered suitable habitat for most activities) between disjunct habitat areas. These movements can supplement small subpopulations with new members and provide for gene flow among multiple small groups. This pattern of partially isolated sub-populations with occasional demographic and genetic movement among them is known as a metapopulation. The proposed project would not prevent long-distance movement among distant sub-populations.

Peninsular bighorn sheep have been observed, albeit infrequently, at the existing Quarry site and the proposed Quarry expansion areas. During biological surveys conducted for the Biological resources Technical Report (Aspen 2019; Appendix D-1), PBS signs such as tracks, scat (feces), and "beds" (i.e., cleared areas for resting or sleeping) were commonly observed on upland slopes above the proposed Quarry expansion areas, especially near the southern end of the proposed Quarry areas, and less often observed in the unnamed alluvial wash.

Skeletal remains of an apparent bighorn sheep were also observed near the southern end of the proposed Quarry areas (Figure 4.2-2). PBS tracks were also observed commonly near the active Quarry area in 2014, following a year of heavy rainfall and subsequent ponding within the Quarry. Due to the ponding, USG pumped water from the Quarry, and multiple sheep tracks indicated the animals had repeatedly crossed the wide wash (from the west) to reach the water discharge.

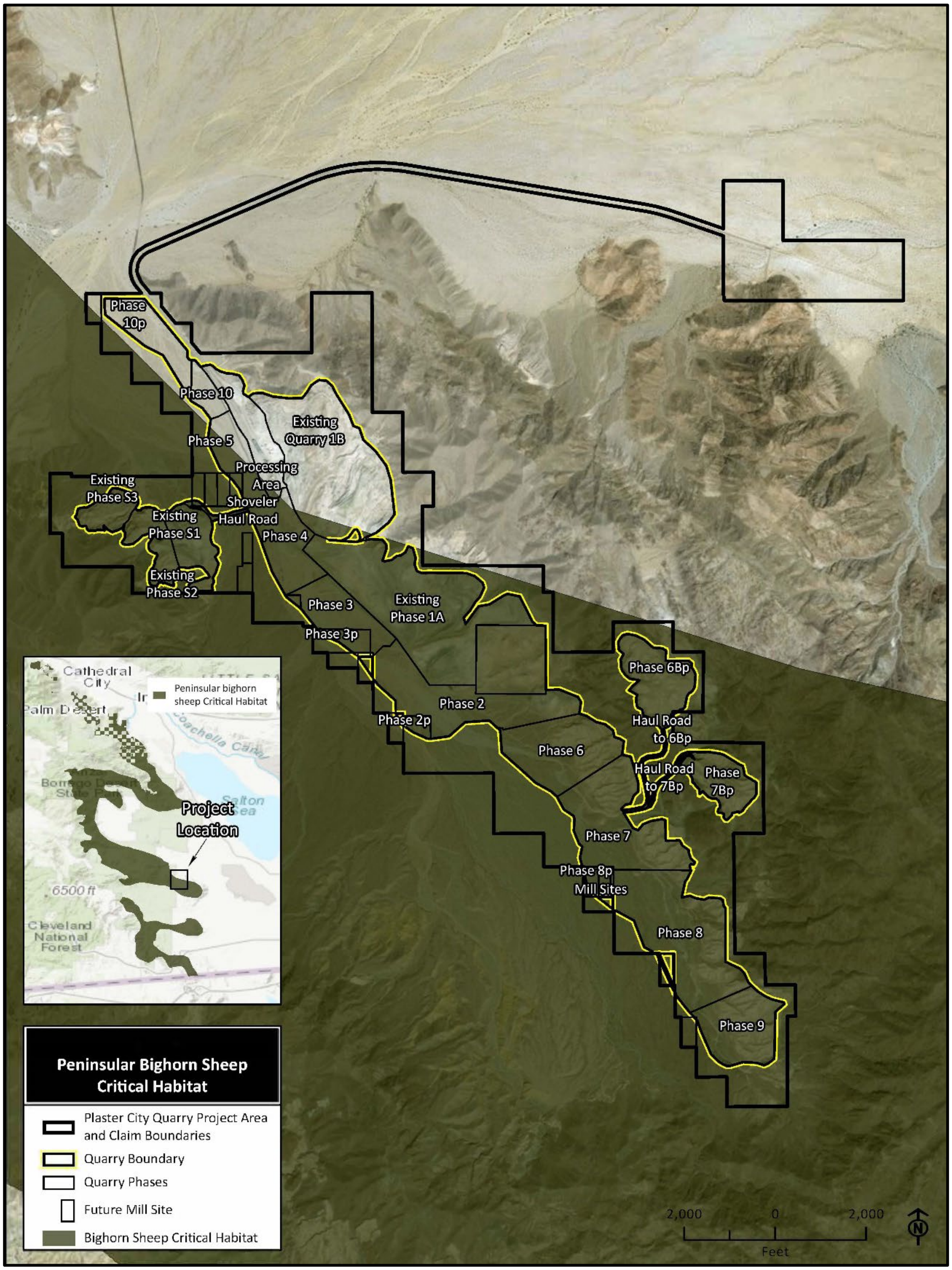
California Department of Parks and Recreation unpublished data also include PBS occurrences in the project area: sign was observed in the Shoveler claims area on the west part of the project site, and at the narrow-gauge rail line where a sheep evidently crossed from west to east north of the USG processing area and went into the Fish Creek Mountains above the existing Quarry. Finally, an individual PBS was documented on the project site in 2006. In early August, Quarry staff saw an animal in the Shoveler claims area at the west part of the project site; over the next few days, it was seen twice more near the processing area (though the workers did not get good views). Finally, on August 7, 2006, the remains of a dead immature male PBS were found at the Shoveler claims area. The USG Quarry Manager contacted Anza-Borrego Desert State Park. A Park officer investigated the site and disposed of the remains. There was no evidence of predation (e.g., by mountain lion) or major injury and the cause of death is unknown.

The CDFW has only recently begun to understand ewe group structure and seasonal movements within the Fish Creek Mountains (FCM). CDFW observed 15 PBS, including 1 lamb, 1 yearling ewe, 6 ewes and 4 rams in the FCM during the 2016 aerial survey. However, during more recent ground telemetry monitoring upwards of 30 sheep have been observed.

There is no abundance estimate for the FCM ewe group alone. Because PBS move between the Fish Creek Mountains and Vallecito Mountains by way of Split Mountain, CDFW's surveys of the two mountain ranges are combined. For the 2016 aerial survey the total Vallecito and FCM adult ewe estimate was 79, the adult ewe/yearling ewe estimate was 101 and the adult and yearling ewe and ram estimate was 163. Given the increase in the PBS population over the last 10+ years and CDFW's improved understanding of ewe group structure, CDFW hopes to estimate PBS abundance by individual ewe groups. Doing so will depend on funding availability.

To date, CDFW has data from 3 GPS-collared ewes. Thus far, the core use area is in a large north-south running drainage on the eastern side of the Fish Creek Mountains (east of the ridgeline above the Quarry). As of 2017, the distribution and movement patterns had not changed significantly in the Vallecito and FCM ewe groups.

There are only a few known water sources within the Fish Creek Mountains, including the north/south trending canyon at the northeast end of the FCM ewe group's home range. In summer 2016, the lower tinaja was checked and found to be dry; however, CDFW GPS data show this canyon to be the most heavily used during the summer months. As of 2017, numerous tinajas in the FCM have been dry for the past few years (prior to above-average rainfall in 2019). If recurring drought conditions continue these water sources may no longer meet the needs of PBS within FCM and water enhancement projects may be warranted.



SOURCE: Aspen 2019; Figure 4
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.2-3
Peninsular Bighorn Sheep Critical Habitat

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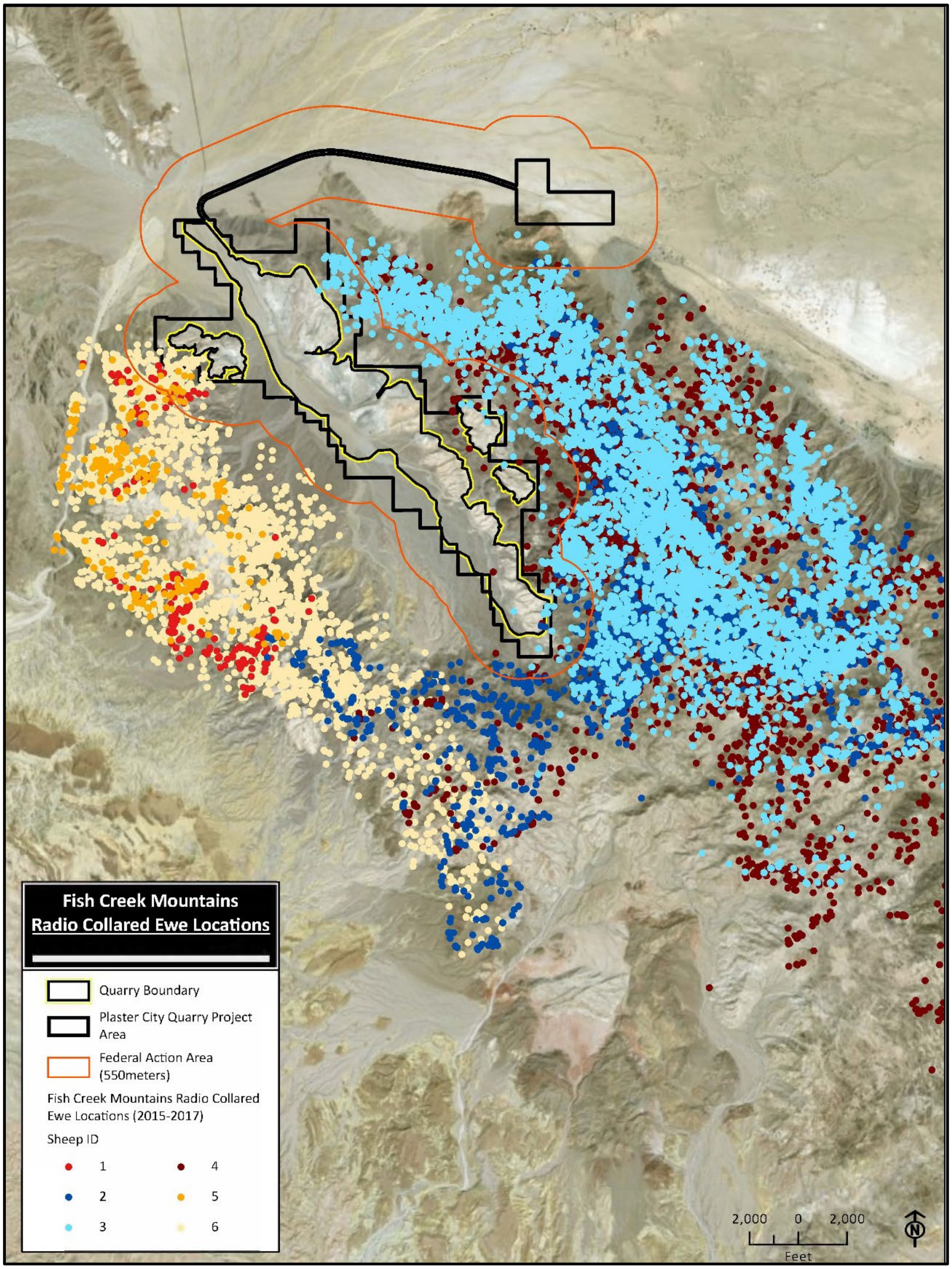

SOURCE: Aspen 2019; Figure 5
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.2-4
Fish Creek Mountains Radio Collared Ewe Locations

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Swainson's hawk

Swainson's hawk (*Buteo swainsoni*) is listed as threatened by CDFW and is recognized as sensitive by the BLM. It is a hawk that preys on small mammals, birds, large insects, reptiles, and amphibians. Swainson's hawks usually hunt from perches such as fence posts and low trees, or from vantage points on the ground. This species is most commonly found over open plains and prairies in the Great Plains and relatively arid areas of western North America. It builds rather flimsy nests in shrubs and trees along wetlands and drainages and in windbreaks in fields and around farmsteads. They nest in the San Joaquin, Owens, and western Antelope Valleys of California. The primary wintering grounds for this species is in Argentina. They migrate through southern California every spring and fall. Suitable foraging habitat for this species is present throughout the project area.

Barefoot banded gecko

This summary is based on reviews by Stebbins (2003, cited in Aspen 2019) and CDFG (2005, cited in Aspen 2019). The barefoot banded gecko (*Coleonyx switaki*) is a state-listed threatened species and a BLM sensitive species. It is not listed under the federal ESA. Its documented geographic range extends from San Diego and Imperial counties south to central Baja California, Mexico. It occurs in rock outcrops and boulder strewn slopes and canyons. It is rarely observed because of its steep, poorly accessible habitat, and because it spends most of its time in rock crevices or below ground. Due to its behavior and inaccessible habitats, its range in southern California may be more extensive than shown by documented occurrences. For example, Stebbins (2003, cited in Aspen 2019) reported it as far north as State Highway 74 in the Santa Rosa Mountains, Riverside County. The nearest known occurrences to the project site are within Anza Borrego Desert State Park and in the Coyote Mountains. The principal threats to barefoot banded geckos appear to be collecting live animals for the reptile hobbyist trade, and consequent habitat destruction (e.g., prying rock crevices apart). Barefoot banded geckos are unlikely to occur on the quarry site or pipeline alignments. The gypsum outcrops do not provide suitable boulders or crevices. The surrounding metamorphic rock outcrops and perhaps the alluvial wash may offer marginal habitat such as boulders and crevices. There is no suitable habitat in the proposed pipeline alignment. Barefoot banded geckos were not found during field surveys conducted for the 2008 EIR/EIS or during recent field surveys in a portion of the gypsum quarry conducted in compliance with Mitigation Measure 3.5-1e of the 2008 EIR/EIS and current CDFW survey protocol (CDFG 2011, cited in Aspen 2019).

Desert pupfish

Desert pupfish (*Cyprinodon macularius*) are absent from the project site due to the absence of perennial surface water. However, desert pupfish occurs lower in the watershed, several miles downstream from the quarry. Critical habitat at San Felipe Creek, Carrizo Wash, and Fish Creek Wash and occupied habitat at San Sebastian Marsh are located about 7 miles northeast of proposed Quarry Well No. 3, 11 miles northeast of the Quarry, about 20 miles north of the Plaster City Plant, and about 24 miles north of the proposed wells near Ocotillo.

Historically, desert pupfish were widespread and common in shallow water of stream margins, marshes, springs, and slow-flowing reaches of major rivers in the lower Gila River and Colorado River watersheds in Arizona, California, Baja California, and Sonora Mexico. They are exceptionally hardy, surviving in a broad range of water chemistry and temperature regimes, but they are vulnerable to competition and predation by non-native species. The desert pupfish is endangered due to habitat loss and the introduction of non-native competitors and predators (e.g., Tilapia) into its habitat (Minckley et al. 1991; USFWS 1986; Moyle 2002, all cited in Aspen 2019). Dam construction on several of its river and tributary habitats in Arizona and on the Colorado River inundated some occurrences and dewatered others. Surface water diversions have eliminated habitat in some areas, and lowered water tables due to groundwater pumping and groundwater use by invasive shrubs (*Tamarix ramosissima*) have eliminated other occurrences (USFWS 1986, 1993; CDFG 2005, all cited in Aspen 2019). Agricultural pollution may threaten some occurrences. In California, desert pupfish populations persist in native populations, at San Sebastian Marsh and upstream in San Felipe Creek and tributaries (Imperial County), at Salt Creek (Riverside County), and in shoreline pools and irrigation ditches around the Salton Sea (USFWS 1993, cited in Aspen 2019). They also persist in irrigation canals near the Salton Sea and in a few introduced "refugia" sites, including three in Anza Borrego Desert State Park.

The USFWS designated critical habitat for desert pupfish at San Sebastian Marsh and along portions of its tributaries, San Felipe Creek, Carrizo Wash, and Fish Creek Wash in Imperial County (USFWS 1986, cited in Aspen 2019). In the critical habitat designation, the USFWS listed several activities that could adversely modify critical habitat, including withdrawal of water, either directly or indirectly, from San Sebastian Marsh. In addition, the USFWS (1993, cited in Aspen 2019) published a Desert Pupfish Recovery Plan with recommendations for land management and recovery.

BLM Sensitive Species

Flat-tailed horned lizard

The flat-tailed horned lizard (*Phrynosoma mcalli*) is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. The flat-tailed horned lizard has been proposed for federal listing several times but in each case the USFWS determined that listing was not warranted (USFWS 2011b, cited in Aspen 2019). Although not federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003, cited in Aspen 2019); its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command. Together, these agencies manage several large reserves, including the West Mesa Management Area. A portion of the existing narrow gauge rail line crosses the West Mesa Management Area, but none of the project components are located within it. The West Mesa Management Area is located approximately 2 miles north of the proposed replacement pipeline alignment and about 5 miles east of the proposed new pipeline alignment (Flat-tailed Horned Lizard Interagency Coordinating Committee 2003, cited in Aspen 2019).

The flat-tailed horned lizard's historic range extends throughout much of southeastern California, southwestern Arizona, northwestern Sonora and northeastern Baja California, Mexico. Populations are becoming isolated from one another by development. They occur almost exclusively in windblown sand dunes and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 8 inches (20 cm). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003) Flat-tailed horned lizard was not observed during the surveys. They were observed in the immediate vicinity of the proposed pipeline alignment in 2016 and 2017 (inaturalist 2018, cited in Aspen 2019). They have a high potential to be present along both pipeline alignments and only a moderate potential to be present in the washes at the downstream end of the quarry.

The USFWS (2011b, cited in Aspen 2019) determined that flat-tailed horned lizard populations within Management Areas are not low or declining and that most populations (with the exception of occurrences in the Coachella Valley) are not likely to become endangered in the foreseeable future. The USFWS evaluated the conservation efforts implemented under the Rangewide Management Strategy and recognized that these efforts reduce threats and "promote actions that benefit the flat-tailed horned lizard throughout its range." The USFWS states that "there is no information to suggest that the flat-tailed horned lizard population is declining or is in danger of becoming an endangered species in the foreseeable future."

Colorado Desert fringe-toed lizard

Colorado Desert fringe-toed lizard (*Uma notata*) is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. It lives in fine, loose, wind-blown sand, primarily in desert dunes and sandy washes. Their range in California includes the Sonoran Desert from Anza Borrego State Park to the Arizona and Mexico borders in Imperial and San Diego counties.

Suitable windblown habitat is present along both pipeline alignments. There are recent records of Colorado Desert fringe-toed lizard within about 5 miles of the proposed pipeline (inaturalist 2018, cited in Aspen 2019). It has the highest potential for occurrence along the proposed pipeline where the habitat is intact and has relatively little disturbance. There is minimally suitable habitat and very few records near the existing pipeline, therefore it has a low potential to be present. No suitable habitat is present within the quarry.

Golden eagle

Golden eagle (*Aquila chrysaetos*) is federally protected under the Bald and Golden Eagle Protection Act (BGEPA), recognized as sensitive species by the BLM, and considered a fully protected species by CDFW. They are year-round residents throughout most of their range in the western U.S. In the southwest, they are more common during Winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late Winter and early Spring in the California deserts. In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs, or large trees that are used as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to tend eggs or young at their nests. Foraging habitat consists of open terrain including grasslands, deserts, savanna, and early successional forest and shrubland habitats. They prey primarily on rabbits and rodents, but will take other mammals, birds, reptiles, and some carrion.

Golden eagle home ranges in the Mojave Desert ranged from 1.7 to 1,369 square miles, and averaged 119 square miles (Braham et al. 2015, cited in Aspen 2019). In any given year, eagles may initiate nesting behavior at one nest, without any activity at the other nests. Eagles may complete breeding by laying eggs and raising chicks or may abandon the nest without successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites.

Marginally suitable nesting habitat is present within the project area and there is a low potential for nesting. Numerous cliffs were observed within 0.5 miles of the project area and are likely to provide suitable nesting habitat. Suitable foraging habitat is present throughout the project area and there is a high potential for golden eagles to forage throughout.

Burrowing owl

Burrowing owl (*Athene cunicularia*) is a CDFW Species of Special Concern and recognized as sensitive by the BLM. It inhabits arid lands throughout much of the western U.S. and southern interior of western Canada (Poulin et al., 2011, cited in Aspen 2019). In this portion of its range, some owls are migratory, while some are year-round residents. Burrowing owls prefer flat, open annual or perennial grassland or gentle slopes and spare shrub or tree cover. However, they are routinely found in desert shrub communities, including those that are present in the project area. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. Burrowing owls often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008, cited in Aspen 2019). The breeding season in southern California generally occurs from February to August with peak breeding activity from April through July (Poulin et al. 2011, cited in Aspen 2019).

A single burrowing owl was observed during surveys of the project area in October 2014. Given the timing of the survey and that the owl was unpaired, this was likely a dispersing or wintering individual. Subsequent surveys of the project area conducted during the breeding season did not detect any burrowing owls. However, suitable burrowing owl nesting habitat and foraging habitat is present throughout the project area. This species is considered to have moderate potential to nest in the project area.

Bats

Five special-status bat species recognized as sensitive by the BLM have at least a moderate potential to forage over the project area: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), and Western mastiff bat (*Eumops perotis californicus*). Pocketed free-tailed bat (*Nyctinomops femorosaccus*) also has at least a moderate potential to be present but is not recognized by the BLM as sensitive but is recognized as a CDFW Species of Special Concern. The pallid bat, Western mastiff bat, and California leaf-nosed bat forage in open areas over grasslands, agricultural areas, and other shrublands and roost in a variety of habitats including buildings, rock crevices, and caves. Townsend’s big-eared bat roosts primarily in caves and abandoned mines (Harvey et. al. 2011, cited in Aspen 2019). The spotted bat forages on moths in the desert during winter months and roosts in deep crevices in cliffs (CDFW 2018, cited in Aspen 2019). The gypsum cliffs and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. In addition, the entire project site provides suitable foraging habitat for these bats.

Other Special-status Wildlife

Loggerhead shrike

The loggerhead shrike (*Lanius ludovicianus*) is a CDFW Species of Special Concern. It is a widespread species in the United States and throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. It most often occurs in open canopied forest and woodland habitats. It nests in well-concealed microsites in densely foliaged trees or shrubs (Miller 1931; Bent 1950, cited in Aspen 2019). It feeds on large insects, but will also take small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. Loggerhead shrikes often impale their prey on thorns, barbed wire, or other sharp objects. Loggerhead shrike was present within the quarry during nesting season and likely nested there. It has a high potential to be present along the pipeline alignments.

Black-tailed gnatcatcher

The black-tailed gnatcatcher (*Polioptila melanura*) is recognized as a watch list species by CDFW. It is a small songbird that nests in desert shrublands, typically in areas with thickets of mesquites, palo verdes, or acacias. They occur from the deserts of southern California east through Texas and south into Mexico. Black-tailed gnatcatchers were observed nesting within the quarry during surveys in the spring of 2016. They were nesting in habitat mapped as catclaw acacia thorn scrub. Suitable nesting habitat is present throughout the project area with the highest potential for occurrence within the quarry and along the proposed pipeline.

American badger

American badger (*Taxidea taxus*) is a CDFW Species of Special Concern. Badger natural history is summarized by Brehme et al. (2012, cited in Aspen 2019). They were once widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the State. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and use multiple dens and cover burrows within their home range. Badgers move among burrows daily, although they can use a den for a few days at a time. Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Badgers also prey on birds, eggs, reptiles, invertebrates, and carrions. The diet shifts seasonally and yearly depending upon prey availability.

The gypsum outcrops and the alluvial areas of the planned quarry expansion areas provide unsuitable or poorly suitable habitat for digging and burrowing (the gypsum outcrops consist of bedrock overlain by relatively thin layers of weathered, clay-like gypsum material; the alluvium has very high rock content).

The two pipeline routes provide suitable burrowing substrates, although their proximity to roads, OHV activity, and the narrow-gauge rail line may dissuade badgers from using those areas. No American badger or its sign was observed during the surveys. Suitable foraging habitat is present throughout the project site and badgers have a moderate to high potential to occur occasionally, but relatively low probability of denning in the project site.

Desert kit fox

Desert kit fox (*Vulpes macrotis arsipus*) is protected under Title 14, Section 460, California Code of Regulations, as well as the California Fish and Game Code (Sections 4000-4012), which defines kit fox as a protected furbearing mammal. Both regulations prohibit the take of the species. Desert kit fox is an uncommon to rare permanent resident of arid regions of southern California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox preys on rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, and birds (Zeiner et al. 1990, cited in Aspen 2019). Desert kit fox is primarily nocturnal, and inhabits open, flat areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and pup rearing.

No kit fox or kit fox sign was observed during the surveys. As described above for American badger, suitable foraging habitat is present throughout the project site and kit foxes have a moderate to high potential to occur occasionally, but relatively low probability of denning in the project site.

Prairie falcon

Prairie falcon (*Falco mexicanus*) is a watch list species in California. It breeds throughout much of arid western North America. They prey on a variety of small mammals, birds, reptiles, and some large insects. They nest almost exclusively on ledges of cliffs and rock escarpments or, occasionally, in stick nests built on the ledges by ravens or other raptors. There are a few regional breeding records (e.g., at Anza-Borrego Desert State Park [Unitt 1984, cited in Aspen 2019]) and nesting prairie falcons may forage over very wide ranges (Johnsgard 1990, cited in Aspen 2019). Almost all prairie falcon sightings in the region are made during winter or migration seasons. Suitable nesting habitat is present in the project area, and they have a moderate potential to utilize the habitat. They are likely to occasionally forage within the project site.

Other Raptors

Several special-status birds of prey are found seasonally in the region, especially during winter and migration: sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and merlin (*Falco columbarius*). Suitable winter or migratory season foraging habitat for these raptors is widely available throughout the region. These species, if present, may forage within the project area but would not nest because of a lack of suitable habitat.

Native birds

Most birds, including their nestlings and eggs, are protected under the California Fish and Game Code Sections 3503, 3503.5, and 3513, and the federal Migratory Bird Treaty Act. Most of these species have no other special conservation status. Fifteen bird species have been recorded on the site during field surveys (see Appendix D-1). Suitable foraging and nesting habitat for protected bird species, as well as “stopover” habitat for migratory songbirds, is found throughout the project area (Aspen 2019).

Aquatic Jurisdictional Resources

The Quarry is located in an elongated valley along an unnamed wash and on the lower hillsides of the northeastern Fish Creek Mountains. The alluvial wash slopes at a gradient of about 2 percent generally toward the northwest. The slopes of the Fish Creek Mountains to the northeast and Split Mountain to the southwest drain into this wash, via unnamed washes and small washlets, and by sheet flow. Surface runoff drains to the north across the alluvial fan into Fish Creek Wash, through a system of braided tributaries across the bajada to San Felipe Creek and San Sebastian Marsh, and then to the Salton Sea. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. In some areas, the channels are deeply incised to bedrock.

The jurisdictional delineation (Hernandez 2016) determined that a total of 139 acres of non-wetland waters of the state are present within the Quarry expansion area.

Well No. 3 Site and Pipeline

The proposed pipeline alignment crosses open desert shrubland on the alluvial slope and immediately adjacent to slopes northward from the Quarry, and along the desert bajada to the proposed new well site.

The pipeline alignment supports common desert wildlife species and is expected to support other species not observed during the surveys, such as those identified in the Quarry expansion areas. The area is also expected to support flat-tailed horned lizard (*Phrynosoma mcallii*) and Colorado desert fringe-toed lizard (*Uma notata*), with suitable windblown sand habitat present for the species.

According to the 2019 SEIS, there are no jurisdictional wetlands present within the proposed pipeline alignment. However, there are a few drainage courses along the alignment that would likely meet criteria as state jurisdictional ephemeral stream channels, subject to permitting under Section 16013 of the Fish and Game Code, and possibly as waters of the US subject to permitting under Section 404 of the Federal Clean Water Act (Imperial County 2019).

Viking Ranch Restoration Site

The following discussion is based primarily on the Habitat Mitigation and Monitoring Plan (HMMP; Dudek 2021; Appendix D-4) prepared for the project which identifies two offsite mitigation sites to offset anticipated impacts to non-wetland waters of the state including the Viking Ranch Restoration Site (Viking Ranch site). The HMMP provides a summary of existing conditions at the Viking Ranch site and provides guidelines for compensatory mitigation design, installation, maintenance, and monitoring.

Vegetation

Dominant vegetation habitat within the Viking Ranch Restoration Site is desert saltbush scrub, disturbed habitat, and Sonoran creosote bush scrub. The existing vegetation is highly disturbed due to the site's previous use as an orchard and consists of a mixture of sparse, scattered, patchy, or remnant vegetation. At the time of the biological survey, tree chippings were compiled into windrows or spread evenly as groundcover. Tree stumps and larger branches were observed on site. Windblown sand and sediment had covered tree chippings in some areas, especially the northwest section.

Four native vegetation communities and two land cover types were mapped by Dudek biologists within the site. These vegetation communities and land cover types are described in Table 4.2-1, "Vegetation Communities and Land Cover Types within the Viking Ranch Restoration Site," and the following text. Their spatial distributions are presented in Figure 2-4, "Old Kane Springs Road Preservation Site." As shown, the dominant vegetation types are disturbed habitat, Sonoran creosote bush scrub, and desert saltbush scrub.

Table 4.2-1
Vegetation Communities and Land Cover Types within the Viking Ranch Restoration Site

Vegetation Class	Vegetation Type	Total (Acres)
Disturbed and Developed Areas	Disturbed Habitat	49.0
	Orchards and Vineyards	1.9
	Disturbed and Developed Areas Subtotal	**50.9**
Scrub and Chaparral	Sonoran Creosote Bush Scrub[1]	53.2
	Sonoran Wash Scrub[1]	1.4

Vegetation Class	Vegetation Type	Total (Acres)
	Desert Saltbrush Scrub[1]	35.0
	Scrub and Chaparral Subtotal	**89.6**
Riparian and Bottomland Habitat	Mesquite Bosque[1]	19.5
	Riparian and Bottomland Habitat Subtotal	**19.5**
	Total[2]	**160**

Source: Oberbauer et al. 2008, cited in Dudek 2021
Notes:
1. Considered special status by the County (2010)
2. Totals may not sum due to rounding.

Disturbed Habitats

Disturbed habitats are areas that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association (Oberbauer et al. 2008, cited by Dudek 2021). These areas may continue to retain soil substrate. If vegetation is present, it is almost entirely composed of nonnative vegetation, such as ornamentals or ruderal exotic species.

Disturbed habitat was identified by Dudek biologists primarily in the eastern portion of the Viking Ranch site and is characterized by the disturbed soils and lines of wood chip mulch and the predominance of Russian-thistle (*Salsola paulsenii, S. tragus*) with some Mediterranean schismus (*Schismus barbatus*). There is no significant shrub cover, but occasional patches of plicate tiquilia (*Tiquilia plicata*) and desert dicoria (*Dicoria canescens*) are present in some areas (Dudek 2021).

Orchards and Vineyards

Orchards and vineyards are usually artificially irrigated and dominated by one (or sometimes several) non-native tree or shrub species. Understory growth of orchards and vineyards often include short grasses and other herbaceous plants between the rows of trees or vines (Oberbauer et al. 2008, cited in Dudek 2021). Although orchards and vineyards are of limited value to most native plants and animals, they can provide nesting and perching sites for several bird species.

On the Viking Ranch site, orchards and vineyards are mapped along the southern boundary in the eastern portion where a window of horsetail trees (*Casuarina equisetifolia*) has been planted. The edges of the orchard in the eastern portion of the site include giant reed (*Arundo donax*), saltcedar (*Tamarix ramosissima*) and honey mesquite (*Prosopis glandulosa var. torreyana*) (Dudek 2021).

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub is an upland vegetation type that is dominated by creosote bush (*Larrea tridentata*) and may include white bur-sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and ocotillo (*Fouquieria splendens ssp. splendens*). Shrubs are generally widely spaced; the ground layer is generally dominated by bare ground with seasonal ephemeral herbs (Oberbauer et al. 2008, cited by Dudek 2021).

Sonoran creosote scrub dominates the southwestern portion of the Viking Ranch site and also occurs in the northeastern and northwestern corners. The Sonoran creosote scrub on site is dominated by creosote and includes the following associated species: four-wing saltbush (*Atriplex canescens*), desert dicoria, and white bur-sage. The understory is dominated by sparse Mediterranean schismus, but some areas include cryptantha (*Cryptantha spp.*). Overall, the community is sparse with less than 15 percent of total vegetative cover. Disturbance of this community is evident with tree chippings patchily distributed throughout (Dudek 2021).

Sonoran Wash Scrub

Sonoran wash scrub is a desert wash vegetation community located in the drier parts of desert streams. This community is generally dominated or co-dominated by leafy burrobush (*Ambrosia monogyra*), desert-lavender (*Condea emoryi*), and/or chuperosa (*Justicia californica*). Other associated species include catclaw acacia (*Senegalia greggii*), desert willow (*Chilopsis linearis ssp. arcuata*), dalea (*Psorothamnus spp.*), ironwood (*Olneya tesota*), and/or mesquite (*Prosopis glandulosa*) (Oberbauer et al. 2008, cited by Dudek 2021).

Sonoran wash scrub occurs in a wash in the northeastern corner of the Viking Ranch site. According to Dudek biologists (2021), this community is co-dominated on the site by desert dicoria and creosote bush with smoke tree (*Psorothamnus spinosus*). Other species with less cover include desert willow, leafy burrobush, many-fruit saltbush (*Atriplex polycarpa*), and plicate tiquilia. Overall, vegetation density is relatively low with less than 10 percent cover. The community is disturbed with evidence of tree chippings in clumps throughout (Dudek 2021).

Desert Saltbush Scrub

Desert saltbush scrub is typically strongly dominated by a single saltbush (*Atriplex spp.*) species with some succulent species. This community occurs in areas with high alkalinity and/or salinity (Oberbauer et al. 2008, cited by Dudek 2021).

Desert saltbush scrub occurs in the northwestern and southeastern portions of the project site. On site, this community is generally dominated by many-fruit saltbush. Associated species include creosote bush, desert dicoria, smoke tree, honey mesquite, arrow weed (*Pluchea sericea*), barbwire Russian-thistle (*Salsola paulsenii*), white bur-sage, cryptantha, and four-wing saltbush. In the southern portion of the site, this open community is codominated by big saltbush (*Atriplex lentiformis*), many-fruit saltbush, and desert-holly (*Atriplex hymenelytra*) and moderately disturbed by Russian-thistle, Mediterranean schismus, and mustard (*Sisymbrium spp.*). There is also evidence of past orchard use within the desert saltbush scrub on site (i.e., soil disturbance and tree chippings). Overall, the community is sparse with low cover of shrubs.

Mesquite Bosque

Mesquite bosque is a drought-deciduous streamside thorn forest dominated by mesquite with scattered saltbush and open understories dominated by annual and perennial grasses. This community is generally maintained by frequent flooding or fire (Oberbauer et al. 2008). On site, mesquite bosque occurs in a swath that extends from the northwestern quadrant to the southeastern corner of the site. This community on site is generally dominated by mesquite and many-fruit saltbush. Some smoke tree, tamarisk (*Tamarix spp.*), creosote, and desert willow are also present at low cover. The understory generally consists of scattered Mediterranean schismus. Overall, the community is relatively open with less than approximately 20 percent vegetation cover. Much of the mesquite bosque is mapped within the floodplain on site.

Wildlife

A general biological survey and habitat assessment for sensitive species was conducted on the Viking Ranch site by Dudek biologists on October 17, 2019. Fifteen species of wildlife were observed during the survey. The results of the habitat assessment are summarized below. Additional information on the existing wildlife species on the Viking Ranch site are provided in Appendix H of Appendix D-4.

No special-status amphibians or reptiles were observed or have high potential to occur on the Viking Ranch site. Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a low potential to occur based on the status of the habitat.

Two special-status birds were observed within the Viking Ranch site, black-tailed gnatcatcher (*Polioptila melanura*) and loggerhead shrike (*Lanius ludovicianus*). Additionally, Swainson's hawk has a high potential to forage within the Viking Ranch site. However, there is insufficient nesting habitat present.

One special-status mammal was observed within the Viking Ranch site, San Diego black-tailed jack. The site contains an open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur in the Viking Ranch site. Peninsular bighorn sheep (Ovis Canadensis nelson; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Viking Ranch site boundaries and has a similar composition of dominant plant species. However, the potential PBS foraging habitat within the Viking Ranch site is considered degraded and low quality (Dudek 2021).

Aquatic Jurisdictional Resources

A jurisdictional wetland delineation was conducted in 2016 to determine the presence and extent of jurisdictional aquatic features on the Viking Ranch site (Dudek 2021; see Appendix E of Appendix D-4).

Pursuant to the federal Clean Water Act, ACOE and RWQCB, jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. Areas regulated by the RWQCB are generally coincident with the ACOE but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act.

A predominance of hydrophytic vegetation, associated with a stream channel, was used to delineate CDFW-regulated riparian areas. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979, cited in Dudek 2021).

Features that convey or hold water are regulated by multiple agencies. Federal, state, and local agencies have different definitions and terminology for these types of features. Water-dependent resources regulated by ACOE, RWQCB, CDFW, and the County are collectively referred to as jurisdictional aquatic resources herein. Terminology used in this document to distinguish each jurisdictional aquatic resource according to the agency that regulates the resource is as follows:

- ACOE and RWQCB: "Wetland" and "non-wetland waters." Wetland waters of the United States and non-wetland waters of the United States are subject to regulation by ACOE and RWQCB, pursuant to the Clean Water Act. Within the mitigation site, ACOE waters of the United States, and RWQCB waters of the United States overlap, and therefore are combined under one term: "non-wetland waters".

- CDFW: "Riparian areas" and "streambeds." Lakes, rivers, and streambeds, including any associated riparian habitat, are subject to regulation by CDFW, pursuant to the California Fish and Game Code. Within the mitigation site, CDFW streambeds are synonymous with ACOE and RWQCB non-wetland waters.

San Diego County's Resource Protection Ordinance (RPO) (County of San Diego 2012) identifies environmental resources, including wetlands, present within the County, and provides measures to preserve these resources. The RPO defines wetlands as lands that have one or more of the following attributes: (1) lands that periodically support a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) lands in which the substratum is predominantly undrained hydric soil; or (3) lands where an ephemeral or perennial stream is present and whose substratum is predominantly non soil, and where such lands contribute substantially to the biological functions or values of wetlands in the drainage system. County-regulated wetlands would be identified where a predominance of hydrophytic vegetation is associated with a stream channel.

Results of the jurisdictional delineation for the Viking Ranch site are shown in Table 4.2-2, "Viking Ranch Restoration Site Jurisdictional Aquatic Resources." There are approximately 53.12 acres of RWQCB jurisdictional non-wetland waters present within a braided channel, ephemeral channels, and floodplain on the Viking Ranch site. However, the condition of these jurisdictional areas remains highly modified from the historic agricultural use including remnant windrows of chipped trees and topographic modifications that alter the normal braided water flows across the Viking Ranch site.

Table 4.2-2
Viking Ranch Restoration Site Jurisdictional Aquatic Resources

General Vegetation Community/Land Cover Category	**Vegetation Type**	**Jurisdictional Resource Type**			**Acres**[1]
		Braided Channel	***Ephemeral Channel***	***Floodplain***	
Disturbed or Developed Areas	Disturbed Habitat	-	0.04	-	0.04
	Orchards and Vineyard	-	0.44	-	0.44
Disturbed or Developed Areas Subtotal		**-**	**0.48**	**-**	**0.48**
Riparian and Bottomland Habitat	Mesquite Bosque	0.23	-	14.92	15.15
Riparian and Bottomland Habitat Subtotal		**0.23**	**-**	**14.92**	**15.15**
Scrub and Chaparral	Desert Saltbush	0.10	0.04	-	0.14
	Sonoran Creosote Bush Scrub	0.09	0.02	35.89	36.00
	Sonoran Wash Scrub	1.35	-	-	1.35
Scrub and Chaparral Subtotal		**1.54**	**0.06**	**35.89**	**37.49**
Total RWQCB Non-Wetland Waters and CDFW Streambeds[1]		**1.77**	**0.54**	**50.81**	**53.12**

Source: Oberbauer et al. 2008, cited in Aspen 2019
Notes:
1. Totals may not sum due to rounding.

Old Kane Springs Road Preservation Site

The following discussion is based on the HMMP (Dudek 2021; Appendix D-4) for the off-site mitigation sites, including the Old Kane Springs Road Preservation Site (Old Kane Springs site).

Vegetation

Two native vegetation communities were mapped by Dudek biologists within the Old Kane Springs site: (1) Sonoran mixed woody scrub, and (2) desert dry wash woodland. These vegetation communities are described below and summarized in Table 4.2-3, "Vegetation Communities within the Old Kane Springs Road Preservation Site." Their spatial distributions are presented in Figure 2-2c, "Site Location—Old Kane Springs Road Preservation Site." These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008, cited in Dudek 2021).

Table 4.2-3
Vegetation Communities within the Old Kane Springs Road Preservation Site

Vegetation Class	Vegetation Type	Total (Acres)
Scrub and Chaparral	Sonoran Mixed Woody Scrub[1]	50.55
Riparian and Bottomland Habitat	Desert Dry Wash Woodland[1]	60.08
	Total[2]	**119.63**

Source: Oberbauer et al. 2008, cited by Dudek 2021
Notes:
1. Considered special status by the County (2010)
2. Totals may not sum due to rounding.

Sonoran Mixed Woody Scrub

Sonoran Mixed Woody Scrub is described as a Colorado desert community with mixed woody species occurring on well-drained slopes and alluvial fans, usually at the base of mountains. The three most characteristic species of this community also dominate this vegetation community on site: creosote bush, white bursage and ocotillo (Oberbauer et al. 2008, cited in Dudek 2021). This community occurs outside of the well-defined alluvial fans/drainages on the site.

Desert Dry Wash Woodland

Desert Dry Wash Woodland is described as an open to dense, drought-deciduous riparian scrub woodland 30-60 feet tall that is typically dominated by ironwood, desert willow) or blue palo verde (*Parkinsonia florida*). It occurs in sandy, gravelly washes and arroyos of the lower Mojave and Colorado deserts. These washes typically have braided channels that are substantially rearranged with every surface flow event (Oberbauer et al. 2008, cited in Dudek 2021).

On site, this community is dominated by ironwood and occupies the main alluvial fan/wash in the center of the site. Scattered creosote bush shrubs occur within this community, along with white bursage (Dudek 2021).

Wildlife

A general biological survey and habitat assessment for sensitive species was conducted on the Old Kane Springs site on September 1, 2021, by Dudek biologists (see Appendix D-4). Additional information on the existing wildlife species on the Old Kane Springs site are provided in Appendix M of Appendix D-4.

Seven species of wildlife were observed during the biological survey of the Old Kane Springs site. Two species of birds were observed including bushtit (*Psaltriparus minimus*), and mourning dove (*Zenaida macroura*). One invertebrate species, dainty sulphur (*Nathalis iole*) and two reptile species, sidewinder (*Crotalus cerastes*) and tiger whiptail (*Aspidoscelis tigris*) were also observed. In addition, two mammals were recorded on site including desert kangaroo rat (*Dipodomys deserti*) and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). No amphibian species were recorded during the surveys.

No special-status amphibians, reptiles, or birds were observed within the Old Kane Springs site or have high potential to occur on the site. Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a moderate potential to occur based on the habitat present at the site.

One special-status mammal was observed within the Old Kane Springs site, San Diego black-tailed jack. The site contains an open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur on the Old Kane Springs site. Peninsular bighorn sheep (*Ovis Canadensis nelson*; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Old Kane Springs site boundaries. The composition of dominant plant species is similar to adjacent habitat.

Aquatic Jurisdictional Resources

A jurisdictional wetland delineation was conducted for the Old Kane Springs Road site to determine the presence and extent of jurisdictional aquatic features on the project site (Dudek 2021; see Appendix E of Appendix D-4). During the jurisdictional delineation survey, the site was walked by Dudek biologists and evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of potential jurisdictional aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity (Dudek 2021).

Since no hydrophytic vegetation and/or associated wetlands were present on the Viking Ranch site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as “non-wetland waters,” were delineated from bank to bank, using the top of the bank as the boundaries of the channel (Dudek 2021).

Non-wetland Waters of the State

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels within the desert dry wash woodland vegetation community. This wash was mapped from bank to bank to include all low-flow channels within its banks as one large non-wetland water. Additionally, several smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features on the Viking Ranch site deemed to be potentially jurisdictional by Dudek biologists are shown on Figure 2-4.

Non-wetland waters on site are ephemeral meaning they only flow during storm events. These features were mapped because they had evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks. These features are classified as non-wetland waters and are likely regulated by RWQCB and CDFW as waters of the state (Dudek 2021).

Swales

Several potential swale features without well-defined banks may present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but may be considered jurisdictional upon agency review; they can be added to the map using aerial signatures at a later date if needed.

Results of the jurisdictional delineation are summarized in Table 4.2-4, "Jurisdictional Resources within the Old Kane Springs Road Preservation Site," and on Figure 2-5, "Plaster City Quarry Plan." There are approximately 60.99 acres of RWQCB-jurisdictional non-wetland waters present both inside and outside of alluvial fan/wash and outside of alluvial fan wash.

Table 4.2-4
Jurisdictional Resources within the Old Kane Springs Road Preservation Site

Type	Jurisdiction	Acres
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQB	59.76
Non-Wetland Waters of the State (Outside of Alluvial Fan/Wash)	CDFW and RWQB	1.23
Total ACOE/RWQB Non-Wetland Waters and CDFW Streambeds[1]		**60.99**

Source: Dudek 2021
Notes:
1. Totals may not sum due to rounding

4.2.2 Regulatory Setting

4.2.2.1 Federal

Federal Endangered Species Act

The FESA (16 USC 1531-1544) provides protection for federally listed endangered and threatened species and their habitats. An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. Other special-status species include proposed species and species of concern. Proposed species are those that have been officially proposed (in the *Federal Register*) for listing as threatened or endangered. Species of concern are species for which not enough scientific information has been gathered to support a listing proposal, but still may be appropriate for listing in the future after further study. A delisted species is one whose population has reached its recovery goal and is no longer in jeopardy. The USFWS administers the FESA. A project may obtain permission to take federally listed species in one of two ways: (1) a Section 10 Habitat Conservation Plan (HCP) issued to a private party; or (2) a Section 7 Biological Opinion (BO) from the USFWS or the National Oceanic and Atmospheric Administration (NOAA) issued to another federal agency that funds or permits an action (such as the USACE issuance of a permit under CWA Section 404). Under either section of the ESA, adverse impacts to federally listed species must be avoided, minimized, or mitigated to the satisfaction of the USFWS and/or NOAA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668-668D, 54 Stat. 250) prohibits the take, possession, sale, or transport of bald eagles and golden eagles and their parts, eggs, or nests without a permit issued by the USFWS.

Migratory Bird Treaty Act

Raptors (birds of prey), passerine birds, and other migratory avian species are protected by a number of state and federal laws. The Migratory Bird Treaty Act (16 USC 703-712) establishes special protection for migratory birds by regulating hunting or trade in migratory birds. Furthermore, this Act prohibits anyone to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Section 10.13, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR Part 21). The definition of "take" includes any disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young), and such activity is potentially punishable by fines and/or imprisonment.

Clean Water Act (Section 404/401 Jurisdiction)

The USACE regulates discharge of dredged or fill material into waters of the United States under Section 404 of the federal CWA (33 USC 1251–1376). "Discharge of fill material" is defined as the addition of fill material into waters of the United States, including, but not limited to, the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; fill for intake and outfall pipes and subaqueous utility lines (33 CFR Section 323.2[f]). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and state water quality standards.

Waters of the United States include a range of wet environments such as lakes, rivers, streams (including some intermittent streams), mudflats, sandflats, wetlands, sloughs, and wet meadows. The USACE typically considers USGS 7.5-minute quadrangle map "blue line" drainages to be jurisdictional waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and nontidal waters are described below.

- Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR Section 328.3[b]). Presently, to be a wetland, a site must exhibit three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the "normal circumstances" for the site.
- The lateral extent of non-tidal waters is determined by delineating the ordinary high water mark (33 CFR Section 328.4[c][1]). The ordinary high water mark is defined by the USACE as "that line on shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]). The Clean Water Act regulations were just revised in June 2020, and may be revised again in the next 1-2 years.

4.2.2.2 State

California Endangered Species Act

Similar to the ESA, the CESA (California Fish and Game Code Sections 2050–2116), along with the Native Plant Protection Act (Fish and Game Code Sections 1900–1913), authorizes the California Fish and Game Commission to designate, protect, and regulate the taking of special-status species in California. CESA defines "endangered" as those species which are "in serious danger of becoming extinct throughout all, or a significant portion, of its range...." (Fish and Game Code Section 2062). Species State-listed as threatened are those not presently threatened with extinction, but which are "likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts...." (Fish and Game Code Section 2067).

Section 2080 of the Fish and Game Code prohibits the taking of State-listed plants and animals. Any projects that may adversely affect species that are State listed as threatened or endangered or candidate species must formally consult with CDFW. CDFW can issue incidental take permits under Section 2081 of CESA. The County's approval of the project does not eliminate the applicant's obligation to comply with Fish and Game Code Section 2080. In other words, compliance with CESA does not automatically occur based on the County's approvals or the completion of CEQA. Before and during implementation of the project, consultation with CDFW is required to ensure that project implementation does not result in unauthorized "take" of a State-listed species.

CDFW Species of Concern

In addition to species formally listed under the ESA and CESA, species of special concern receive consideration by CDFW and local lead agencies during the CEQA process. Species that may be considered for review are included on a list of species of special concern, developed by CDFW. It tracks species in California whose breeding populations in California may be decreasing or face local extirpation. To avoid the future need to list these species as endangered or threatened, CDFW recommends consideration of these species, which do not as yet have any legal status, during analysis of the impacts of projects.

Lake or Streambed Alteration

Under Section 1602 of the California Fish and Game Code, a private party must notify CDFW if a project will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake." If an existing fish or wildlife resource may be substantially adversely affected by the activity, CDFW may propose reasonable measures to protect those resources. If these measures are agreeable to the party, they may enter into an agreement with CDFW identifying the approved activities and associated mitigation measures.

Executive Order W-59-93

California Executive Order W-59-93 (Order), signed by Governor Pete Wilson in 1993, along with implementing regulations and a draft wetlands policy, prescribes an overall state goal of no net loss of wetlands. The Order states the following three objectives for the State of California's comprehensive wetlands policy:

1. To ensure no overall net loss and long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.
2. To reduce procedural complexity in the administration of State and Federal wetlands conservation programs.
3. To encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus on wetlands conversation.

The Order directs that all agencies of the state shall conduct their activities consistent with their existing authorities, in accordance with these three objectives.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [Section 13000 et seq.]) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine RWQCBs to plan, implement, manage, and enforce water quality protection and management. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The project site is located within the SFBRWQCB and is regulated by the SFBRWQCB. The National Pollutant Discharge Elimination System (NPDES) permitting program is administered by the SWRCB. To obtain a NPDES permit under the General Permit for stormwater, applicants must prepare and submit a notice of intent with the SWRCB and development of a stormwater pollution prevention plan (SWPPP) and monitoring program that incorporates applicable BMPs.

401 Water Quality Certification and Wetlands Program

The 401 Water Quality Certification and Wetlands Program is responsible for regulating discharges of dredged or fill material to waters of the state. The SWRCB and the RWQCBs have the authority to regulate these discharges under Section 401 of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne), described above.

State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State

On April 2, 2019, the State Water Board adopted the State Wetland Definition and Procedures for the Discharge of Dredged or Fill Material to Waters of the State (Procedures). The Procedures consist of four major elements: 1) a wetland definition; 2) a framework for determining if a feature that meets the wetland definition is a water of the state; 3) wetland delineation procedures; and 4) procedures for the submittal, review and approval of applications for Water Quality Certifications and Waste Discharge Requirements for dredge or fill activities. The Procedures became effective May 28, 2020. Applicants proposing to discharge dredged or fill material into waters of the state are required to comply with the Procedures unless an exclusion applies, or the discharge qualifies for coverage under a General Order.

On December 18, 2020, the Sacramento Superior Court issued a decision that prohibited the State Water Resources Control Board (“SWRCB”) from implementing California’s new wetlands and “waters of the state” protection program, and limited SWRCB’s application of the regulatory program to only waters already protected under the federal Clean Water Act.

Waste Discharge Requirements Program

Waste discharges that can be exempted from the California Code of Regulations (CCR) requirements are issued waste discharge requirements (WDRs) by the Water Boards and are regulated by the State Water Board WDR Program. Typical discharge types include domestic or municipal wastewater, and industrial wastewater. State regulations addressing the treatment, storage, processing, or disposal of waste are contained in Title 27, CCR, Section 20005 et seq. (hereafter Title 27). Discharges that qualify for exemption from Title 27 must be consistent with the exemptions provided in Title 27 Section 20090.

CEQA Guidelines

CEQA Guidelines Section 15065 requires a mandatory finding of significance for projects that have the potential to substantially degrade or reduce the habitat of a fish or wildlife species, and to fully disclose and mitigate impacts to special-status resources. Although threatened and endangered species are protected by specific federal and State statutes, described above, the CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria for the region or locality.

4.2.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan Conservation Element* pertain to biological resources and the proposed project:

Conservation and Open Space Element

Goal 1:	Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.
Objective 1.4:	Ensure the conservation and management of the County's natural and cultural resources.
Objective 1.6:	Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.
Goal 2:	The County will integrate programmatic strategies for the conservation of critical habitats to manage their integrity, function, productivity, and long-term viability.
Objective 2.4:	Use the CEQA and NEPA process to identify, conserve and restore sensitive vegetation and wildlife resources.

Water Element

Goal 2:	Protection of Surface Waters. Long-term viability of the Salton Sea, Colorado River, and other surface waters in the County will be protected for sustaining wildlife and a broad range of ecological communities.

Objective 2.2: A balanced ecology associated with the riparian and ruderal biological communities important as breeding and foraging habitats for native and migratory birds and animals occurring within the County.

Objective 2.3: Preservation of riparian and ruderal habitats as important biological filters as breeding and foraging habitats for native and migratory birds and animals.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to biological resources and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-1: Inter-Connected Preserve System. A regionally managed, inter-connected preserve system that embodies the regional biological diversity of San Diego County.

COS-1.3: Management. Monitor, manage, and maintain the regional preserve system facilitating the survival of native species and the preservation of healthy populations of rare, threatened, or endangered species.

COS-1.9: Invasive Species. Require new development adjacent to biological preserves to use non-invasive plants in landscaping. Encourage the removal of invasive plants within preserves.

Goal COS-3: Protection and Enhancement of Wetlands. Wetlands that are restored and enhanced and protected from adverse impacts.

COS-3.1: Wetland Protection. Require development to preserve existing natural wetland areas and associated transitional riparian and upland buffers and retain opportunities for enhancement.

COS-3.2: Minimize Impacts of Development. Require development projects to:

- Mitigate any unavoidable losses of wetlands, including its habitat functions and values; and
- Protect wetlands, including vernal pools, from a variety of discharges and activities, such as dredging or adding fill materials, exposure to pollutants such as nutrients, hydromodification, land and vegetation clearing, and the introduction of invasive species.

4.2.3 Significance Criteria and Analysis Methodology

4.2.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's biological resources impacts using the following significance criteria:

The project would have a significant impact on vegetation if it would result in disturbance that would lead to:

- A substantial reduction in the population of a special-status species;
- A substantial reduction in habitat plant species and vegetative cover;
- Removal of any wetland/riparian habitat; or
- Loss of adequate water supply to wetland or riparian habitat.

The project would have a significant impact on wildlife if it would result in disturbance that would lead to:

- A substantial reduction in the population of a special status species;
- A substantial reduction in habitat for a special status species;
- Removal of any wetland/riparian habitat through direct removal, filling, hydrological interruption or other means;
- Substantial interference with the movement of wildlife species or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, BLM Wildlife Management Plan, or other local, state or regional habitat conservation plan or recovery plan.

CEQA Appendix G Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to biological resources if it would:

a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG (now CDFW) or USFWS;
c) have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
d) interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
e) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and

f) conflict with the provisions of any adopted habitat conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.2.3.2 Analysis Methodology

The biological resources that were identified and analyzed in the 2008 EIR/EIS were updated using information from recent literature reviews and field surveys conducted in support of the 2019 SEIS. Aspen Environmental Group (2019; Appendix D-1) reviewed available literature to identify special-status plants, plant communities and wildlife known in the vicinity of the Quarry, Well No. 3 site, and associated pipeline alignment. The CNDDB was reviewed for the presence of special status species in the areas of the project components.

Biological field surveys were conducted in October 2014, April and October 2016, and March and April 2017, by biologists with appropriate experience related to the special-status wildlife and plant species present in the project area. Surveys were conducted throughout the proposed Quarry expansion phases, well site, and pipeline alignment following the Survey Protocols for Special Status Plants developed by BLM California State Office specifically for projects subject to BLM policy, NEPA, and the ESA.

The analysis of potential project impacts to biological resources on the Viking Ranch Restoration Site and the Old Kane Springs Road Preservation Site is based on the *Draft Habitat Mitigation and Monitoring Plan* (Dudek 2021; Appendix D-4) which summarizes the findings of the general biological surveys, habitat assessments, and jurisdictional wetland delineations conducted on the mitigation sites.

4.2.4 Project Impacts and Mitigation Measures

4.2.4.1 2008 EIR/EIS Impact Analysis

Under the 2008 EIR/EIS, impacts to biological resources were determined to be less than significant with mitigation or less than significant.

Impacts to Plant Species

The 2008 EIR/EIS concluded that, based on habitat and geographic and elevational ranges, no listed threatened or endangered plant species would be affected at the Quarry, at Well No. 3, or along the pipeline alignment. In addition, large tracts of similar vegetation and habitat are protected in the adjacent Anza Borrego Desert State Park to the west and BLM-managed wilderness land to the east. Finally, under SMARA, a revegetation plan must be prepared and implemented as part of a reclamation plan for an operating quarry. Revegetation efforts would use local seeds and plants and salvaged topsoil from the site. The revegetation plan required under SMARA would act as mitigation for any potentially significant impacts by revegetating disturbed areas of the Quarry with native plants. For these reasons, the 2008 EIR/EIS concluded that the potential for the Quarry expansion and development of Well No. 3 and the associated pipeline to result in the loss of special status plant species or substantial loss of desert shrubland habitat would be less than significant. Mitigation Measures 3.5-1a and 3.5-1b were provided in the 2008 EIR/EIS to ensure implementation of the revegetation plan for the Quarry.

> ***Mitigation Measure 3.5-1a:*** *Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA.*

> *Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.*
>
> ***Mitigation Measure 3.5-1b:*** *Phasing of Quarry development and closure: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.*

Impacts to Wildlife Species

The 2008 EIR/EIS found that Quarry expansion and well/pipeline development could impact multiple special-status wildlife species including migratory birds, peninsular bighorn sheep, and the barefoot banded gecko. The 2008 EIR/EIS includes the following mitigation measures to reduce potential impacts from Quarry expansion to the special-status wildlife species:

> ***Mitigation Measure 3.5-1c:*** *Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.*
>
> ***Mitigation Measure 3.5-1d:*** *Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the U.S. Fish and Wildlife Service (USFWS) that will: (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.*
>
> *Mining shall be conducted only as approved in the Plan of Operation and the Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the Reclamation Plan. USG shall instruct its employees and other visitors to the mine to avoid peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. USG shall establish a training program, including new-employee orientation and annual refresher, to educate employees regarding bighorn sheep and the importance of avoidance. USG shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the quarry's environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.*
>
> ***Mitigation Measure 3.5-1e:*** *Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG and field biologists would be required to hold Memoranda of Understanding with the CDFG*

to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.

Regarding the development of Well No. 3 and the association pipeline, the 2008 EIR/EIS found that, with the exception of the flat-tailed horned lizard, impacts to all other special-status wildlife species were found to be less than significant; the flat-tailed horned lizard was observed basking on the rails of the narrow-gauge line. The BLM and other cooperating agencies have implemented a Flat-tailed Horned Lizard Rangewide Management Strategy (2003 Revision) that would minimize adverse impacts and mitigate for residual impacts throughout the flat-tailed horned lizard's geographic range. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to the Flattailed Horned Lizard:

***Mitigation Measure 3.5-2:** USG comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.*

Impacts to Fish Species

The 2008 EIR/EIS also evaluated the potential for the Quarry expansion to interfere with surface flows and groundwater recharge and thereby adversely affect discharge in San Felipe Creek, and the potential for operation of Well No. 3 to adversely affect the discharge of San Felipe Creek Spring and Fish Creek Spring. San Felipe Creek, San Felipe Creek Spring, and the Fish Creek Spring support the habitat for a population of desert pupfish (*Cyprinodon mascularius*), an endangered species. The Quarry hydrologic evaluation estimated that the Quarry expansion area (845 acres) accounts for 0.05 percent of the total volume attributed to precipitation within the pupfish's drainage area. The evaluation estimated the drawdown in the springs due to the operation of Well No. 3 would be several thousandths of a foot (approximately 1 millimeter) and therefore would have a less than significant impact on desert pupfish.

Based on the limited contribution of runoff from the Quarry to San Felipe Creek, the 2008 EIR/EIS concluded that, even if activities in the new Quarry areas were to prevent all rainfall from either recharging the groundwater basin or contributing to surface flows, the impact on surface water and groundwater would be negligible compared with other watershed processes and are not likely to have meaningful adverse impacts on pupfish. The Well No. 3 hydrologic evaluation noted that, prior to 1984, flow from San Felipe Creek Spring and Fish Creek Spring only occurred intermittently. Since 1984, however, flow from these two springs had occurred year-round. Water-quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring were due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. Both San Felipe Creek Spring and the Fish Creek Spring support the habitat for a population of Desert pupfish. The evaluation estimated the drawdown in the springs due to the operation of Well No. 3 would be several thousandths of a foot (approximately 1 millimeter) and therefore would have a less than significant impact on desert pupfish. No mitigation was required.

Impacts to Protected Wetlands

The 2008 EIR/EIS evaluated potential impacts to wetlands and other aquatic features as a part of the evaluation of impacts to vegetation. Mitigation Measure 3.5-1f was provided to address potential impacts to streambeds, which may be jurisdictional features.

Mitigation Measure 3.5-1f: *Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.*

4.2.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) and determined that it could result in impacts to peninsular bighorn sheep behavior, desert kit fox and American badger, flat-tailed horned lizard, and nesting birds, including borrowing owls. The following additional mitigation measures were provided in the 2019 SEIS to address these potential impacts:

Mitigation Measure 3.4-5: *Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk (Tamarix) and fountain grass (Pennisetum) in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the area associated with the Proposed Action, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the Proposed Action.*

Mitigation Measure 3.4-6: *Mining Activity Monitoring and Reporting. Prior to the beginning of any Quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to the approval of the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS.*

The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation and mitigation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

- *The Designated Biologist will notify BLM's Authorized Officer and USFWS at least 14 calendar days before the initiation of Quarry expansion of new ground-disturbing activities.*
- *The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys and will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.*
- *The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and USFWS in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.*
- *The Designated Biologist or Biological Monitor will visit the Quarry site periodically (no less than once per month) throughout the life of the project to administer the Worker Education*

Awareness Program (WEAP) and ensure compliance with the plans and programs listed below.

  - *The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of these programs/plans as well as compliance/non-compliance with each conservation measure: (1) Integrated Weed Management Plan; (2) WEAP; (3) Reclamation Plan; (4) Wildlife Mortality Reporting Program; and (5) PBS Monitoring Plan.*

Mitigation Measure 3.4-7: *WEAP. Prior to project approval, USG will develop a WEAP, to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction, operations, and maintenance personnel. The WEAP will be approved by the BLM, USFWS, and CDFW, and will include the following: (1) Descriptions of special-status wildlife of the region, including PBS, and including photos and how to identify adult and sub-adult male and female PBS; (2) The biology and status of special-status species of the area, including PBS; (3) A summary of the avoidance and minimization measures and other conservation measures; (4) An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data; (5) An explanation of the flagging or other marking that designates authorized work areas; and (6) Actions and reporting procedures to be used if any wildlife, including PBS is encountered.*

Mitigation Measure 3.4-8: *Wildlife Impact Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project (e.g., Plant and Quarry operations).*

- *To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.*
- *The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven days prior to initial site clearing for Quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist in consultation with CDFW will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active.*
- *For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the work day. The Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85º F) for the presence of flat-tailed horned lizard or Colorado Desert fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations)*

shall be inspected for the presence of any wildlife, particularly including the flat-tailed horned lizard or Colorado Desert fringe-toed lizard, prior to backfilling.

- *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.*
- *Speed limits along all access roads will not exceed 15 miles per hour.*
- *Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.*
- *The boundaries of all areas to be newly disturbed (including Quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground-disturbing activities occur outside the staked area during initial Quarry expansion or ground disturbance.*
- *Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the PoO).*
- *No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.*
- *To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, Quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.*
- *No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the project site, on off-site project facilities and activities, or in support of any other project activities.*
- *Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.*
- *Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.*

Mitigation Measure 3.4-9: *Burrowing Owl Avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with the CDFW's* Staff Report on Burrowing Owl Mitigation *(March 2012), including provision of replacement burrows prior to the exclusion.*

Mitigation Measure 3.4-10: *Critical Habitat. To minimize impacts to PBS designated critical habitat, USG will conduct 1:1 on-site reclamation as specified in the Mining and Reclamation Plan for all project disturbance areas. Additionally, USG will acquire or set aside an area of designated critical habitat away from the Quarry's operations for long-term wildlife habitat conservation, to minimize the loss of designated critical habitat within the Quarry. The habitat acquisition measure will be applicable for public lands directly affected by the Proposed Action. The acquired lands will consist of native desert vegetation within designated PBS critical habitat. Acquisition lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM and Wildlife Agencies.*

Mitigation Measure 3.4-11: *PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by funding the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW.*

Mitigation Measure 3.4-12: *PBS Avoidance and Minimization. USG will implement the following measures throughout the life of the project.*

- *New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.*
- *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities and will walk the perimeter of the Quarry expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.*
- *If a PBS enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.*
- *Fencing installed anywhere within the Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing*

design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to PBS.

Mitigation Measure 3.4-13. *Future Quarry Phasing Notification and Review. USG will notify the BLM, CDFW, and USFWS 90 days prior to initiating future mining activities in the four phases nearest to the highest PBS occurrence and habitat connectivity areas (phases 6Bp, 7Bp, 8, and 9). Upon notification, the agencies will coordinate with USG to review PBS occurrence and activity in the vicinity obtained during the intervening years, as well as relevant documentation of Nelson's bighorn sheep behavior near other mining operations. PBS avoidance and minimization measures may be revised as needed to conform to new information.*

4.2.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS and 2019 SEIS. Therefore, any minor revisions would not create a new or increase a significant impact related to biological resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

Since the 2008 EIR/EIS was prepared, there have been changes to applicable regulations, plans or policies/management goals that affect biological resource management. In 2009, the USFWS published the final designation of critical habitat for peninsular bighorn sheep, replacing the original critical habitat designation published in 2001. The planned Quarry expansion area is located within designated critical habitat. The footprint of the existing Quarry (as of 2009) was excluded from critical habitat.

New Information

An updated Jurisdictional Delineation (Hernandez Environmental Services 2016), updated Biological Resources Technical Report (Aspen Environmental Group 2019), and Update on Groundwater Conditions Memorandum (Todd Groundwater 2019) were completed for the USG Expansion/Modernization Project as part of the 2019 SEIS. The Biological Resources Technical Report reflects the additional data gathered by biological field surveys conducted in October 2014, April and October 2016, and March and April 2017, by biologists with appropriate experience related to the special-status plant and wildlife species of the area. The report indicates that Quarry expansion and development of Well No. 3 and the associated pipeline could result in impacts to peninsular bighorn sheep behavior, desert kit fox and American badger, flat-tailed horned lizard, and nesting birds, including borrowing owls. Avoidance and minimization measures were recommended to address potential impacts to these species. These measures include the recommendation that USG acquire or set aside an area of designated critical habitat away from the Quarry's operations for long term wildlife habitat conservation in order to minimize the loss of designated critical habitat within the Quarry. The report notes that the acquisition of compensation habitat will be subject to review and approval by the BLM and wildlife agencies (e.g., CDFW). This compensation habitat recommendation was included as Mitigation Measure 3.4-10 in the 2019 SEIS.

The Jurisdictional Delineation identified a total 325.79 acres of unnamed streambeds within the Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The Jurisdictional Delineation noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The Jurisdictional Delineation recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction. An Update on Groundwater Conditions memorandum conducted an analysis that indicates that current Quarry operations are not the cause of the recent decline in flows at San Felipe Creek. The memorandum notes that no changes have occurred in the local groundwater basin that alter the findings in the 2008 EIR/EIS.

Significance Determination

Based on project revisions, changed circumstances, and new information that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.2.4.4 Subsequent Environmental Analysis

Impact 4.2-1: The Project Could Have Substantial Adverse Effects on Special-Status Plant Species or Plant Communities

Quarry, Well No. 3, and Associated Pipeline

The Biological Technical Memorandum (Aspen 2019; Appendix D-1) presents the findings of new biological field surveys conducted for the Quarry site and expansion area, well site, and associated pipeline alignment in 2014, 2016, and 2017.

General Vegetation Impacts

According to Aspen (2019), seven vegetation and land cover types were mapped within the area of the proposed Quarry expansion and well/pipeline development. Vegetation, cover types, and acreages of each vegetation and cover type within this area are shown in Appendix L of Appendix D-1. The anticipated effects of the proposed project on plant species that were discussed in the 2008 EIR/EIS and the required mitigation measures have not changed. Quarry phasing and on-site reclamation as specified in the site's approved reclamation plan would minimize the overall effects on vegetation and reduce them over time. Potential vegetation effects were further addressed by 2019 SEIS Mitigation Measure 3.4-10 which requires PBS critical habitat conservation.

Project activities could result in the spread of invasive weeds or to the introduction of new weed species in the area which could degrade habitat for special-status plants. SEIS Mitigation Measure 3.4-5 would require preparation and implementation of an Integrated Weed Management Plan to prevent or control the spread of invasive weeds.

Impacts to Special-Status Plant Species

According to Aspen (2019; Appendix D-1), no state or federally listed plants were observed during the surveys or have potential to be present in the Quarry expansion area. One BLM Sensitive Plant, Orcutt's woody aster (*Xylorhiza orcuttii*) may have moderate potential to occur due to the presence of gypsum soils, but it was not observed during protocol surveys and is not expected. No other BLM Sensitive Plants have potential to occur. Several special-status plants with a CRPR of 2B or 4 (CRPR definitions are found in Appendix L of Appendix D-1) were observed. While these species are not protected by state or federal policy, their occurrences are tracked by the CNDDB. Wiggins' croton (*Croton wigginsii*) is a state-listed special-status plant that occurs primarily at the Algodones Dunes area about 50 miles east of the Quarry. It has been reported near the Plaster City Plant but not near the Quarry. The Quarry expansion component of the project may affect occurrences of Thurber's pilostyles (*Pilostyles thurberi*), brown turbans (*Malperia tenuis*), Coulter's lyrepod (*Lyrocarpa coulteri*), and annual rock-nettle (*Eucnide rupestris*) as described in Appendix L of Appendix D-1. These species are widely distributed regionally, their conservation status does not preclude disturbing them, there is extensive undisturbed and protected habitat in the local mountains (including wilderness areas and State Park lands), and the project's effect would be confined to the local individuals impacted. Although no mitigation for special-status plant species is required, implementation of SEIS Mitigation Measure

This would also conserve habitat for multiple other plant and wildlife species.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1a (Revegetation)*
  - *MM 3.5-1b (Concurrent Reclamation)*
- *2019 SEIS:*
  - *MM 3.4-5 (Integrated Weed Management Plan)*
  - *MM 3.4-10 (PBS Critical Habitat Conservation)*

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

Proposed restoration activities on the Viking Ranch site could adversely affect multiple vegetation communities that are considered special status by the County of San Diego (2010). As shown in Table 4.2-1, above, the Viking Ranch site contains approximately 53.2 acres of Sonoran Creosote Bush Scrub, 1.4 acres of Sonoran Wash Scrub, 35.0 acres of Desert Saltbush Scrub, and 19.5 acres of Mesquite Bosque. Each of these vegetation communities is considered special status by the County of San Diego (Dudek 2021).

Restoration activities could result in temporary impacts to vegetation communities. However, the Mitigation Work Plan for the Viking Ranch site outlined in the HMMP (Dudek 2021; Appendix D-4) includes numerous measures that would be implemented during restoration activities to minimize impacts to native vegetation including temporary fencing to protect areas outside of the disturbance area, implementation of interim weed control measures, and biological monitoring and worker training. Revegetation would be implemented using a native seed mix to ensure re-establishment of native plant species in graded areas. Once completed, the restored Viking Ranch site would exhibit more natural hydrologic conditions. Reestablishment of braided stream flow patterns connected with adjacent properties would better support desert plant communities compared to existing conditions. Restoration activities would be carried out in accordance with the HMMP and under supervision of the project biologist in consultation with USFWS and CDFW.

As noted above, four of the vegetation communities identified on the site are identified by the San Diego County RPO as “sensitive habitat lands” which are lands that either (1) include populations of sensitive species or (2) contain unique vegetation communities. The RPO prohibits grading, grubbing, clearing and any other use damaging to sensitive habitat lands. Exceptions can be made when all feasible measures necessary to protect and preserve the sensitive habitat lands are required as a condition of permit approval and where mitigation provides an equal or greater benefit to the affected species. As described above the HMMP provides measures to protect site vegetation and require revegetation of graded areas with a native seed mix. Once completed, restoration would have an overall beneficial effect on the sensitive habitat lands on the Viking Ranch site. Therefore, the project would be consistent with the requirements for sensitive habitat lands contained in the County RPO and no mitigation would be required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

There are no proposed physical activities on the Old Kane Springs Road Preservation Site. Thus, no impacts to vegetation or special status plant species are anticipated and no mitigation is required.

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.2-2: The Project Could Have Substantial Adverse Effects on Special-Status Wildlife Species

Quarry, Well No. 3 Site, and Associated Pipeline

The Biological Technical Memorandum (Aspen 2019; Appendix D-1) presents the findings of new biological field surveys conducted for the Quarry site and expansion area, well site, and associated pipeline alignment in 2014, 2016, and 2017.

General Wildlife Effects

Most wildlife would vacate the area to avoid moving equipment, and equipment operators would avoid clearly visible wildlife (such as large mammals). However, quarrying or well/pipeline construction could cause injury or mortality in small mammals and reptiles, particularly during initial grading or site clearing work. Food or water could attract wildlife or feral dogs into the work area, putting wildlife at risk. Wildlife could be struck by vehicles or become trapped in trenches or materials (e.g., pipes) stored onsite.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*

Level of Significance After Mitigation: Less than significant.

Special-Status Wildlife

The proposed project could directly or indirectly affect special-status wildlife through injury or mortality or through habitat loss or degradation. With implementation of the mitigation measures provided here, the project is not expected to significantly impact Peninsular bighorn sheep, desert kit fox, America badger, barefoot banded gecko, nesting birds (including burrowing owl) or other special-status wildlife. The planned quarry expansion areas are within designated PBS critical habitat, and the project would directly affect critical habitat, although the planned expansion areas show little evidence of PBS usage.

Initial site clearing activities could cause take of special-status reptile (e.g., flat-tailed horned lizard), bird (e.g., burrowing owl), or mammal (e.g., American badger) species if the animals or their active nests or dens are present during the clearing. However, mitigation measures identified below would avoid or minimize these effects. A hydrology analysis indicates that the project would not affect off-site desert pupfish habitat (Bookman-Edmonston 2002a, 2002b, cited in Aspen 2019).

Pre-construction clearance surveys and clearly delineated work areas are required by SEIS Mitigation Measure 3.4-6 to minimize or avoid direct impacts of special status species. In addition, habitat effects could be offset through any habitat compensation that may result from federal ESA consultation with the USFWS (SEIS Mitigation Measure 3.4-10 and 3.4-13). Note that any habitat compensation for PBS may also provide suitable nesting or foraging habitat for one or more other special-status species of the area, depending on specific habitat characteristics. Potential impacts are described further for each special-status species in the following paragraphs.

Peninsular Bighorn Sheep

PBS is federally listed as endangered, state listed as threatened, and designated as a "fully protected animal" by the California Fish and Game Code. PBS is recognized as genetically isolated from other populations located farther to the north and east.

Potential project impacts to PBS are categorized below, into habitat impacts, potential for injury or mortality, disruption of behavior, interruption of access to foraging areas, reproduction and lambing activities, and habitat fragmentation and connectivity.

The project would affect suitable and occupied PBS habitat located adjacent to the existing disturbance area and would occur in phases over the 73-year mining authorization (80-year estimate for mining and final reclamation). In general, mining will proceed from currently active quarry areas in the north toward future phases in the south. Site-specific mining will depend on multiple factors such as gypsum characteristics in various parts of the quarry, blending needs for production, and market conditions. This total habitat effect is diminished because (1) quarry areas would be reclaimed after completion of mining in each area, so that the previously mined areas would be under reclamation as new areas are developed and mined; (2) former quarry areas, even without reclamation, can serve several habitat values for PBS, including escape terrain, sheltering, and bedding; (3) the habitat value of upland gypsum outcrops appears to be relatively low, based on PBS location data (Figure 4.2-4), probably due to minimal forage availability and crusted clay surface; and (4) excluding the gypsum outcrops, habitat (e.g., topography and vegetation) in the planned quarry expansion area is similar to habitat throughout Recovery Region 8 (USFWS 2000b, cited in Aspen 2019); there are no known special habitat resources such as surface water sources or lambing areas within the active or planned quarry expansion areas.

Future quarrying would directly affect two habitat types: upland gypsum outcrops and alluvial wash. The upland gypsum outcrops appear to have minimal habitat value, based on vegetation, topography, soil conditions, and PBS location data. The alluvial wash habitat likely supports higher-quality PBS forage, although it is mostly not adjacent to escape terrain due to presence of gypsum outcrops located between the alluvial wash and the upslope escape terrain. PBS locations indicate only infrequent occurrence in the alluvial wash areas. Mining activities would remove forage plants and other habitat components from the alluvial mining areas, and would significantly alter the outcrop quarry areas, possibly creating steep slopes and benches that may serve as escape terrain (Bleich et al. 2009, cited in Aspen 2019). The total area of planned disturbance to the alluvial wash is approximately 400 acres, mapped primarily as creosote bush scrub, creosote bush – white bursage scrub, catclaw acacia thorn scrub, and smoketree woodland. Upon completion of mining, each below-grade quarry area will be reclaimed to a condition suitable for use as foraging.

The new pipeline construction and pipeline replacement components of the project are not expected to affect PBS habitat.

The potential PBS direct habitat impacts would be minimized, offset, or reduced over time through implementation of the following measures (see Section 4.2.4 for the full text of each measure):

- 2008 EIR/EIS:
    - MM 3.5-1d (Peninsular Bighorn Sheep)
- 2019 SEIS:
    - MM 3.4-5 (Interim Weed Management Plan)
    - MM 3.4-10 (Peninsular Bighorn Sheep Habitat Mitigation)

Mining and reclamation have little potential for causing direct injury or mortality to PBS. There exists a possibility of transportation accidents (truck and train) as well as blasting accidents. Truck and train traffic and blasting have occurred on the site since 1921 and these activities are visible to PBS from sufficient distances to allow avoidance by PBS. Given the apparent avoidance of active quarry areas by PBS (Figure 4.2-4), the probability of injury or death is small. In addition, if the project were to attract or introduce domestic livestock or feral dogs to the site, those animals could either transmit livestock diseases to PBS, or prey on PBS. The potential for injury or mortality would be minimized or avoided through implementation of the following measures (see Section 4.2.4 for the full text of each measure):

- 2008 EIR/EIS:
  - MM 3.5-1d (Peninsular Bighorn Sheep)
- 2019 SEIS:
  - MM 3.4-6 (Mining and Construction Activity Monitoring and Reporting)
  - MM 3.4-7 (Worker Education Awareness Program)
  - MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures (including 15 mph speed limit)
  - MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting
  - MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures

Human presence, lighting, dust, construction noise, blasting, noise and vibrations from heavy equipment, may affect PBS behavior in the quarry vicinity. Quarry noise or disturbance impacts may cause PBS to avoid upland habitat adjacent to the planned mining areas that PBS currently use as escape terrain, foraging, or movement among local ewe groups. A number of studies have been conducted to evaluate bighorn sheep responses to human activities (e.g., Hicks and Elder 1979; Keller and Bender 2007; Papouchis et al. 2001, all cited in Aspen 2019) and generally conclude that bighorn sheep increase their distance to humans, especially when they are approached, but the effects of disturbance are temporary. Additionally, PBS appear to acclimate to ongoing activities such as mining (Bleich, 2009 and references cited therein, cited in Aspen 2019) and fluctuating levels of mining activity, including blasting, did not appear to affect Nelson's bighorn sheep in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009, cited in Aspen 2019).

Urban Crossroads (2018, cited in Aspen 2019) prepared a study of quarrying noise at the USG Plaster City Quarry, consisting of long-term (one-hour) measurements from several locations in the existing and planned quarry areas, short-duration noise levels within short distances of quarrying equipment, and short-duration measurement of blasting noise. Urban Crossroads recorded operational levels ranging from 30.8 dBA 3 near the southern end of the planned quarry expansion (about 2 miles from the current activity) to 47.7 dBA in the vicinity of ongoing operations where background noise sources include electrical equipment, people talking, truck engines starting, truck movements, and truck horns sounding for safety purposes. These correspond to faint (below 40 dBA) or moderately loud (above 40 dBA) levels. Short-duration measurement of equipment noise, such as truck pass-by, truck unloading, and crusher activity ranged from 67.7 dBA to 88.2 dBA at 50-foot distances, corresponding to loud or very noisy levels. Blasting measured over a 1-second duration registered 128.7 dBZ 4 at a distance of 425 feet, corresponding to 134.9 dBZ at a standard 50-foot distance. The most likely behavioral response by PBS will be to temporarily avoid active quarrying or materials processing areas, including nearby undisturbed habitat. PBS location data (Figure 4.2-4) include many data points in the immediate vicinity of the active quarry area, consistent with literature reports indicating acclimation to quarrying activities including blasting. Implementation of the proposed Quarry expansion, quarry production and quarrying activities may increase. The Urban Crossroads analysis indicates only a minimal increase in overall noise levels from increased quarry production. Consistent with the behavior of Nelson's bighorn sheep as quarry production increased and decreased in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009, cited in Aspen 2019), the level of overall disturbance to PBS is not expected to change.

The proposed well and pipeline construction is unlikely to affect PBS behavior due to the location along the existing narrow-gauge rail line, where PBS occurrence is rare. If PBS are in the vicinity during construction, then the construction activities would likely affect PBS behavior as described above for quarry activities.

The potential to disrupt PBS behavior would be minimized primarily through implementation of the following measures (see Section 4.2.4 for the full text of each measure):

- 2008 EIR/EIS:
  - MM 3.5-1d (Peninsular Bighorn Sheep)
- 2019 SEIS:
  - MM 3.4-6 (Mining Activity Monitoring and Reporting)
  - MM 3.4-7 (Worker Education Awareness Program)
  - MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)
  - MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting)
  - MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures)

Mining and reclamation will disrupt portions of the site for at least 80 years, causing habitat loss, disturbance, and potential behavioral effects described above. Mining-related disturbance may cause PBS to avoid accessing foraging habitat within the alluvial wash, if the disturbance is located between regularly-used slope habitat and the alluvial foraging area. Nonetheless, extensive upland and alluvial habitats are available in the surrounding area. The potential extent of interrupted access to foraging areas in the vicinity of the quarry cannot be quantified.

Proposed well and pipeline construction are not expected to affect PBS access for foraging habitat.

The potential to interrupt PBS access to foraging habitat would be minimized primarily through implementation of the following measures (see Section 4.2.4 for the full text of each measure):

- 2008 EIR/EIS:
  - MM 3.5-1d (Peninsular Bighorn Sheep)
- 2019 SEIS:
  - MM 3.4-6 (Mining Activity Monitoring and Reporting)
  - MM 3.4-7 (Worker Education Awareness Program)
  - MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)
  - MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting)
  - MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures)

Peninsular bighorn sheep lambs and yearlings have been observed in the Fish Creek Mountains east of the quarry. Based on data indicating year-round PBS occupancy, lambing activity (i.e., birth and nursing) presumably occur in the Fish Creek Mountains. GPS location data suggest the most likely lambing area is the north-south trending canyon east of the quarry. Future quarry phases 6Bp, 7Bp, 8, and 9 are nearest to the presumed lambing habitat. Although there are no expected impacts to reproduction and lambing activities, the project includes a requirement that new ground-disturbing activities (i.e., initial quarry development) and blasting may not take place during lambing season (Jan 1- May 30), except with the approval of USFWS and CDFW. This requirement is identified in 2019 SEIS Mitigation Measure 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures).

Continuing and expanded quarry operations would tend to dissuade most terrestrial animals, including PBS, from crossing the active quarry areas. Future mining in the southern end of the planned quarry expansion areas (Phases 8 and 9) is near a habitat linkage between occupied habitat to the east and west of the planned quarry expansion area. This linkage is about 4,000 feet wide. Based on location data (Figure 4.2-3), PBS regularly use habitat immediately adjacent to the active quarrying areas (Phases 1A, 1B, S1, S2, and S3). Based on these activity patterns, PBS are expected to continue to occupy the upland slopes south of Phases 8 and 9. Quarry areas undergoing reclamation would be accessible to PBS, although their localized behavioral response to the previously active quarry areas is unknown. Nelson's bighorn sheep populations in other areas regularly use inactive quarries for routine activities (Bleich, 2009; San Bernardino National Forest, 2014 and citations therein, all cited in Aspen 2019). Throughout the life of the project, surrounding undeveloped open space would continue to provide access to PBS throughout nearly all of the habitat currently in use by PBS.

Proposed well and pipeline construction are not expected to affect biological connectivity for PBS. Construction activities may temporarily dissuade terrestrial animals from using the area. But surrounding undeveloped open space would continue to provide adequate travel routes around these sites.

The potential to affect biological connectivity would be minimized primarily through implementation of the following measures (see Section 4.2.4 for the full text of each measure):

- 2008 EIR/EIS:
  - MM 3.5-1d (Peninsular Bighorn Sheep)
- 2019 SEIS:
  - MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)
  - MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting)
  - MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures)

In conclusion, the proposed project has the potential to adversely affect PBS through habitat modification, direct injury and mortality, inhibiting, disruption of behavior, interruption of access to foraging areas, and habitat fragmentation. However, implementation of the mitigation measures provided in both the 2008 EIR/EIS and the 2019 SEIS would reduce all potential impacts to PBS to a level that is less than significant.

Level of Significance Before Mitigation: Potentially significant.

***Mitigation Measures:** Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-5 (Interim Weed Management Plan)*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*
  - *MM 3.4-10 (Peninsular Bighorn Sheep Habitat Mitigation)*
  - *MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting*
  - *MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures*

Implement the following newly proposed mitigation measure:

***Mitigation Measure 4.2-2a:** Minimize Temporary Use Areas: During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed for immediate use.*

Level of Significance After Mitigation: Less than significant.

Desert Pupfish

The project would not directly affect suitable aquatic habitat for desert pupfish. Desert pupfish occurs at San Sebastian Marsh, which is lower in the Fish Creek watershed, about 7 miles northeast of the nearest USG facilities. Potential effects of the project on desert pupfish, if any, would be indirect impacts to surface water availability in off-site desert pupfish habitat. Groundwater extraction was identified as a threat in the desert pupfish listing (USFWS 1986, cited in Aspen 2019) and in the recovery plan (USFWS 1993, cited in Aspen 2019). It is still considered a threat; especially at occurrences outside California (USFWS 2010, cited in Aspen 2019). The potential link between groundwater extraction and off-site aquatic habitat availability to desert pupfish depends on the rate or volume of extraction and groundwater passage within the affected basin or basins. Reduced groundwater level at a given well location could lead to reduced surface water at a spring or seep, depending on the amount of draw-down and the hydrologic link between the well site and the aquatic habitat. Hydrologic studies prepared by Bookman-Edmonson (2002a; 2002b, cited in Aspen 2019) and Dudek (2018; Appendix D-1) address the Quarry and well site, indicating that neither component of the project would affect occupied pupfish habitat. These studies are described in the following paragraphs.

Hydrologists preparing the analysis have concluded that no impacts would occur to basin water supplies or to San Felipe Creek from project implementation. The analysis shows a drainage area contributing to the San Felipe Creek of 965,388 acres with a volume calculated on annual average precipitation of 583,883 acre-feet of water. The Quarry, including the planned expansion area, contributes 396 acre-feet of water to the basin (0.07 percent by volume). This surface drainage would continue uninterrupted with all drainage from the Quarry directed to the wash.

Hydrogeologists also addressed the possible impacts of withdrawing approximately 26 acre-feet per year of well water from the same basin for use at the Quarry. A calculated draw down of the proposed well at maximum capacity would have a draw down at Fish Creek and San Felipe Creek Springs of approximately 1 millimeter. This is a conservative estimate because values produced by the Theis equation are for drawdowns in confined aquifers. However, the aquifer in the well area is unconfined, and drawdowns will be much less than those for a confined aquifer. Pumping 26 acre-feet per year from an unconfined aquifer would not produce drawdowns that are noticeable at distances of 1,000 feet or less.

Additionally, the location of the San Jacinto Fault, a probable groundwater barrier between the well and the Fish Creek and San Felipe Creek springs, would most likely prevent a cone of depression extending beyond the fault. Thus, the extraction of water from proposed Well No. 3 at capacity would not have a detectable impact directly or cumulatively on habitat supporting the desert pupfish.

Additionally, recent significant loss of surface water in the occupied habitat is believed to be linked to seismic activity (Poff 2017, cited in Aspen 2019) or cessation of nearby irrigation due to conversion of agricultural lands to a solar facility (Todd Groundwater 2018, cited in Aspen 2019).

Level of Significance: Less than significant.

Mitigation Measures: None required.

Barefoot Banded Gecko

The barefoot banded gecko is not expected to occur on the site. However, due to its cryptic nature and inaccessible habitats, it may be more widespread than currently understood. If barefoot banded geckos were to occur on a future mining site, potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Most potential impacts would be minimized through measures identified for general wildlife impacts (above).

Due to its status as a CESA-listed threatened species and a BLM sensitive species, additional mitigation measures were included in the 2008 EIR/EIS and 2019 SEIR. Implementation of these existing mitigation measures would reduce this impact to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
  - *MM 3.5-1e (Barefoot banded gecko)*

- *2019 SEIS:*
  - *MM 3.4-5 (Interim Weed Management Plan)*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*

Implement new Mitigation Measure 4.2-2a, see above.

Level of Significance After Mitigation: Less than significant.

Flat-tailed horned lizard
A suitable habitat for flat-tailed horned lizard is present along several parts of the proposed pipeline alignment. Potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Although not state or federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003). To minimize potential impacts to flat-tailed horned lizard, Mitigation Measure 3.5-2 was included in the 2008 Final EIR/EIS, and an additional recommended measure (routine inspection of wildlife hazards such as open trenches) was incorporated into 2019 SEIS Mitigation Measure 3.4-8 to further minimize impacts to FTHL. The full text of the measures may be found in Section 4.2.4.

Level of Significance Before Mitigation: Potentially significant

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1e (Barefoot banded gecko)*
- *2019 SEIS:*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*

Level of Significance After Mitigation: Less than significant

Special-Status Bats
Several special-status bats could forage over the site or possibly roost in rock crevices within planned quarry expansion areas. Impacts to foraging habitat would be minimal and would be mitigated through measures identified above under Vegetation and Habitat Impacts. Potential impacts to roosts could cause injury or mortality to special-status bats. This potential impact would be avoided or minimized through Mitigation Measure 3.4-8 (Wildlife Impact Avoidance and Minimization Measures).

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2019 SEIS:*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*

Level of Significance After Mitigation: Less than significant.

Desert Kit Fox and American Badger
Both species could use the Quarry or pipeline alignment, although they were not observed during field surveys. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, habitat loss, and noise and disturbance to surrounding habitat. Mitigation measures identified under general wildlife impacts would reduce this impact to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measure (see Section 4.2.4 for the full text of each measure:*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*

Implement new Mitigation Measure 4.2-2a, see above.

Level of Significance After Mitigation: Less than significant.

Nesting Birds Including Burrowing Owl
There are no listed threatened or endangered bird species with moderate or higher potential to occur on the project site and no listed birds were observed during biological surveys. However, the entire project site and surrounding area provide suitable nesting habitat for numerous resident and migratory bird species. Native birds are protected under the California Fish and Game Code and federal Migratory Bird Treaty Act.

Most adult birds would flee from equipment during initial vegetation clearing; however, eggs and nestlings would be vulnerable to project construction activities that may disrupt nesting behavior or damage nests, birds, or eggs. These potential impacts can be minimized or avoided through scheduling initial site disturbance outside the nesting season, as is required by 2019 SEIS Mitigation Measure 3.4-8.

In addition, certain bird species can become entrapped in vertical or horizontal open pipes with diameters from 1 to 10 inches. Cavity-nesting species such as Say’s phoebes, owls, woodpeckers, kestrels, and ash-throated flycatchers are particularly vulnerable. Several avoidance and minimization measures, as well as preconstruction clearance surveys and clearly delineated work areas would be required by 2019 SEIS Mitigation Measure 3.4-8.

One special-status bird species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. Burrowing owls inhabit burrows year-round; therefore, avoidance requires pre-construction surveys and avoidance measures for occupied burrows at any time of year. Implementation of 2019 SEIS Mitigation Measure 3.4-9 would reduce impacts to burrowing owl to a level that is less than significant.

Mitigation measures identified under general wildlife impacts above, in combination with the existing measures listed below, would reduce potential impacts to nesting birds, including burrowing owl, to a less than significant level.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measure (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1c (Migratory Birds)*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*
  - *MM 3.4-9 (Burrowing Owl)*

Implement new Mitigation Measure 4.2-2a, see above.

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

As described previously, there is moderate potential for two special-status bird species to occur on the Viking Ranch site, black-tailed gnatcatcher and loggerhead shrike. In addition, there is suitable foraging habitat present on the site for Swainson's hawk. Implementation of Mitigation Measure 4.2-2b provided below would reduce potential impacts to special-status bird species on the Viking Ranch site by limiting vegetation clearing activities to outside the nesting season (between September 1 and March 1) or requiring a preconstruction nesting bird survey and avoidance measures.

Additionally, one special-status mammal species, San Diego black-tailed jack, was also observed on the Viking Ranch site. There is a suitable habitat for this species present on the site. Implementation of Mitigation Measure 4.2-3 provided below would reduce potential impacts to

The project could have beneficial impacts for FTHL and PBS as restoration activities are anticipated to improve habitat quality and increase the likelihood of occurrence of these species on the Viking Ranch site.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following newly proposed mitigation measure:*

Mitigation Measure 4.2-2b: *Wildlife Avoidance and Minimization Measures—Viking Ranch Restoration Site)*

To avoid impacts to common and special-status wildlife on the Viking Ranch Restoration site, the following measures shall be implemented during restoration activities:

- *The clearing of vegetation and other initial site disturbance shall occur outside of the bird nesting season. Grading shall take place between September 1 and March 1. If grading must occur during the nesting season, a qualified wildlife biologist and biological monitor shall conduct a nesting bird survey prior to clearing work. If an active nest is found it shall be protected in place with a work-free buffer with a radius determined by the biologist in consultation with the CDFW.*
- *Preconstruction surveys for San Diego black-tailed jack and/or active burrows shall be conducted by a qualified biologist prior to initiating restoration activities on the site. If any individuals are observed in a burrow or shelter form, they will be allowed to leave the area on their own accord. Once the burrow is determined clear of rabbits, a qualified biologist shall collapse the burrow or shelter form.*
- *Speed limits on all access roads shall not exceed 15 miles per hour.*
- *Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.*
- *The boundaries of all areas to be newly disturbed (including areas proposed for clearing and grading, access roads, staging and equipment storage areas) shall be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment shall be confined to the flagged area. The biological monitor shall be onsite to ensure that no ground disturbing activities occur outside of the flagged area during vegetation clearing, grading, or other ground disturbing activities.*
- *No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight.*
- *To avoid wildlife entrapment all pipes and other construction materials and supplies shall be covered or capped in storage areas, and at the end of each workday. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.*
- *To avoid wildlife attractants, all trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater shall be avoided or removed to avoid attracting wildlife.*

- *Any injured or dead wildlife encountered during site restoration or monitoring shall be reported to the project biologist, biological monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the project biologist or biological monitor shall notify the USFWS and/or CDFW as appropriate, within 24 hours of the discovery.*

Level of Significance After Mitigation: Less than significant.

Old Kane Springs Road Preservation Site

There are no proposed physical activities on the Old Kane Springs Road Preservation Site. Thus, no impacts to wildlife are anticipated and no mitigation is required.

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.2-3: The Project Could Have Substantial Adverse Effects on State or Federally Protected Wetlands

Quarry, Well No. 3 Site and Pipeline Alignment

The 2008 EIR/EIS determined that Quarry expansion activities would impact existing streambeds which could be under the jurisdiction of CDFG through Sections 1601-3 of the California Fish and Game Code or the US Army Corps of Engineers through Section 404 of the Federal Clean Water Act. Mitigation Measure 3.4-13 was provided requiring USG to contact and consult with these agencies prior to disturbing streambeds within the Quarry expansion areas to determine jurisdiction and regulatory requirements.

The 2019 SEIS included an updated jurisdictional delineation for the project site which identified 139 acres of waters of the US within the expected disturbance area of the proposed Quarry expansion and well/pipeline development. The SEIS included mitigation to offset impacts by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacts functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of the Viking Ranch site and the preservation of the Old Kane Springs site, as described and analyzed herein.

Implementation of this mitigation would fully mitigate the project's impacts to protected wetlands within the project site and no further mitigation is required. The potential environmental effects of implementing this mitigation are addressed throughout this SEIR.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1f (Agency Contacts for Impacts to Streambeds)*

- *2019 SEIS:*
  - *MM 3.4-13 (Future Quarry Phasing Notification and Review)*

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

A jurisdictional wetland delineation was completed for the Viking Ranch site that identified floodplain areas, ephemeral channels, and braided channels on the site, as shown on Figure 2-4. A total of 53.12 acres of jurisdictional waters were identified on the Viking Ranch site. The project proposes to restore the natural hydrologic functioning of these wetlands as mitigation for the anticipated loss of wetlands within the Quarry expansion area and well site. Restoration would occur in accordance with the HMMP (Appendix D-4) to the satisfaction of the USFWS. The HMMP provides ecological performance standards and ongoing monitoring requirements to ensure successful restoration of the site. Therefore, the project would have a less than significant impact on the protected wetlands present on the Viking Ranch site.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

There are no proposed physical activities on the Old Kane Springs Road Preservation Site. Thus, no impacts to protected wetlands are anticipated and no mitigation is required.

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.2-4: The Project Would Not Interfere Substantially with Native Wildlife Movement or Impede Nursery Site Use

The proposed project could affect local wildlife movement patterns at the Quarry. Quarrying and construction operations would tend to dissuade most terrestrial animals from crossing the areas due to the removal of vegetation and soil that would otherwise provide food, shade, and burrowing substrate. Direct impacts, including noise, traffic, and nighttime lighting could also tend to reduce wildlife dispersal across the project site. However, the undeveloped, open space surrounding the Quarry expansion areas would continue to provide travel routes around the existing and proposed Quarry operations, and the short-term nature of pipeline construction would have only a temporary and minimal effect on local wildlife movement. Because the wildlife movement could continue around the Quarry expansion areas, and the pipeline impacts on wildlife movement would be short term, the overall effect on wildlife movement would be minimal. This effect can be further reduced by implementing the avoidance and minimization measures identified in 2019 SEIS Mitigation Measure 3.4-8.

Restoration activities at the Viking Ranch site would be temporary with minimal effect on local wildlife movement. No fencing or other barriers to movement would be erected on or around the site. Long-term the site would be preserved as open space allowing for continued use of the site by resident or migratory species.

Similarly, the proposed preservation of the Old Kane Springs Road site would ensure continued availability of the site for use by resident and migratory species.

No nursery sites were identified during biological surveys of the project site and off-site mitigation sites. As noted in Impact 4.2-3, the project site is not expected to be used for PBS lambing activity; however, 2019 SEIS Mitigation Measure 3.4-12 requires that new ground-disturbing activities (i.e., initial quarry development) and blasting may not take place during lambing season (January 1 through May 30), except with the approval of USFWS and CDFW. Furthermore, 2019 SEIS Mitigation Measure 3.4-8 requires preconstruction surveys and avoidance measures for active bird nests.

Implementation of the existing mitigation measures discussed here would reduce potential impacts to wildlife movement and nursery sites on the project site. No impacts to wildlife movement or nursery sites would occur.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2019 SEIS:*
  - *MM 3.4-8 (Wildlife Impacts Avoidance and Minimization Measures)*
  - *MM 3.4-12 (PBS Avoidance and Minimization Measures)*

Level of Significance After Mitigation: Less than significant

Impact 4.2-5: The Project Would Not Conflict with Any Local Policies or Ordinances Protecting Biological Resources or with Any Adopted Habitat Conservation Plan or Natural Community Conservation Plan

Quarry, Well No. 3 Site and Pipeline Alignment

The Quarry, Well No. 3 site and pipeline alignment are located in Imperial County and are under the jurisdiction of the Imperial County Land Use Ordinance and General Plan. As demonstrated in Table 4.7-1, “Project Consistency with Local Planning Documents,” the proposed project would be consistent with the applicable policies of the Imperial County General Plan including those of the Conservation and Open Space Element. In addition, the project would be consistent with the Imperial County Zoning Ordinance and Surface Mining and Reclamation Ordinance.

The Flat-tailed Horned Lizard Rangewide Management Strategy provides guidance for the conservation and management of sufficient habitat to maintain extant populations of flat-tailed horned lizards in five management areas – four in California and one in Arizona. The West Mesa Management Area (see Figure 1 of Appendix D-1) is located east of the project site. A segment of the Plaster City narrow gauge railroad crosses the management area; however, this segment is not within the project site. Mitigation provided in the 2008 EIR/EIS (MM 3.5-2) and in the 2019 SEIS (MM 3.4-8) would minimize potential impacts to FTHL at the well site and within the pipeline alignment. These measures require project compliance with the management strategy and provide avoidance measures during construction activities. Implementation of these measures would reduce potential impacts to FTHL to a level that is less than significant and ensure compliance with the FTHL Rangewide Management Strategy.

The project site is not within or adjacent to any adopted or proposed habitat conservation plans or natural community conservation plans (CDFW 2019).

Off-Site Mitigation Sites

The Viking Ranch and Old Kane Springs sites are located in eastern San Diego County and are subject to the San Diego County Code and General Plan. As demonstrated in Table 4.7-1, the proposed project would be consistent with the applicable policies of the San Diego County General Plan.

There are three adopted conservation plans west of the mitigation sites: (1) San Diego County Multiple Species Conservation Plan (MSCP); (2) San Diego North County MSCP; and (3) San Diego Gas and Electric Subregional NCCP/HCP. Both mitigation sites are located outside the boundaries of these conservation plans (CDFW 2019).

The proposed preservation and restoration activities at the off-site mitigation sites would not conflict with any local policies protecting biological resources.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
    - *MM 3.5-2 (Flat-tailed Horned Lizard Rangewide Management Strategy)*
- *2019 SEIS:*
    - *MM 3.4-8 (Wildlife Impacts Avoidance and Minimization Measures)*

Level of Significance After Mitigation: Less than significant

SECTION 4.3:
CULTURAL RESOURCES

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SECTION 4.3:
CULTURAL RESOURCES

This section of the draft subsequent environmental impact report (Draft SEIR) documents potential impacts of the project on cultural resources, including archaeological and historical sites and artifacts and human remains.

The information in this section is based primarily on a cultural resources report (2018 CRR) prepared for the US Gypsum Company Expansion/Modernization Project (Pacific Legacy, Inc. 2018) (Appendix E, "Cultural Resources Report"). The 2018 CRR investigates an Area of Potential Effect (APE) that encompasses both the project site (Quarry, Well No. 3 site, pipeline alignment) and an area to the south where a waterline replacement project has been completed. The following discussion summarizes information and findings from the 2018 CRR that pertain only to the proposed project.

4.3.1 Environmental Setting

This section discusses the existing cultural resources conditions within and adjacent to the project site including descriptions of previous cultural resource studies conducted within the APE and cultural resources identified within the APE.

4.3.1.1 Cultural Resources Conditions at the Time of the 2008 EIR/EIS

The 2008 EIR/EIS describes the cultural resources conditions on the project site at the time of its publication. This description was based on information provided in the *Archaeological Investigations for the U.S. Gypsum Company Quarry Expansion and Water Pipeline Replacement Project* prepared by Pacific Legacy, Inc., in 2002.

The approximately 845-acre Quarry expansion area consists of a wash located west and south of quarrying operations, but also includes areas along the western slopes of the Fish Creek Mountains.

Records Search

The records search conducted as part of the 2002 CRR did not identify any previously recorded sites on or in the vicinity of the Quarry or the well site/pipeline alignment.

Field Investigation

A pedestrian surface survey of the Quarry and well site/pipeline alignment was conducted in 2002 using 20 to 30 meter transects. Visibility in the area was noted as being generally good except the southern portion which consists of areas of steep terrain (e.g., 30% slope). These areas of steep terrain were not surveyed due to the nature of the terrain and the low archaeological sensitivity typically associated with such areas. The pedestrian survey noted that large portions of the area, particularly areas in the wash (west and south of quarrying operations), have been previously disturbed by natural events, such as flooding and erosion, and activities associated with previous and current quarrying activities, such as stockpiling of gypsum and overburden.

The pedestrian surface survey identified and recorded one new historic resource, designated as USG-01, which consists of the remnants of a circular stone structure, hearth, and historic trash scatter. According to the 2008 EIR/EIS, Site USG-01 does not seem to be associated with any individuals or events important in regional or local history, does not reflect various historic mining practices, and does not seem to have the potential to yield significant historical information regarding mining in or development of the Imperial Valley. Therefore, the 2008 EIR/EIS determined that the extant remnants of site USG-01 do not meet any of the eligibility criteria for inclusion in either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). In addition, as part of the pedestrian survey, several known historic sites in the vicinity including the Quarry, the Plant, remnants of old County Road S80, and the narrow-gauge railroad were recorded as historic sites.

4.3.1.2 Cultural Resources Conditions at Present

The following discussion is based primarily on the *Cultural Resources Report for the US Gypsum Company Expansion/Modernization Project Supplemental EIS, Imperial, California* prepared by Pacific Legacy, Inc. in 2018 (2018 CRR) (see Appendix E).

The 2018 CRR investigated an Area of Potential Effect (APE) for the Quarry that included all proposed mining areas and all jurisdictional waters within the Plaster City Quarry. The APE for the proposed pipeline between the Quarry and proposed Well No. 3 was 50 feet wide on either side of the proposed pipeline alignment, and the length of the proposed line (approximately 3.45 miles).

Previously and newly recorded cultural resources within the project APE are summarized below in Table 4.3-1, "Cultural Resource Sites and Resources in Proximity to Project Site."

Records Search

The 2002 records search was updated as part of the 2018 CRR (Appendix E). The updated records search did not identify any previous studies that encompass the Quarry other than the Class III pedestrian surface survey conducted in 2002 in support of the 2008 EIR/EIS (2018 CRR), as described above in Section 4.3.1.1.

According to the 2018 CRR, there are three previously recorded cultural resource sites in the APE for the proposed project (see Table 4.3-1). These resources include (1) the Quarry itself, which encompasses numerous isolated finds and a small u-shaped historic period stone structure with debris (Locus 1); (2) the narrow-gauge railroad (Plaster City Railroad P-13-008139); and (3) a small prehistoric scatter of "Yuman Desert Ware" potsherds (P-13-00001) that was first documented in 1950. These resources are described in greater detail below.

Plaster City Quarry

The historic period Plaster City Quarry was originally documented in 2002 as a part of the initial Class III pedestrian inventory survey conducted by Pacific Legacy in support of the 2008 EIR/EIS. The Imperial Gypsum and Oil Corporation owned the quarry in the early 1900s and built the narrow-gauge Plaster City Railroad (P-13-008139) in 1920-1921 to facilitate removal of large quantities of gypsum from the quarry to a crusher plant near the San Diego and Arizona Eastern Railroad alignment (Tucker 1926:271). The Imperial Gypsum and Oil Corporation, however, was not very successful and sold the quarry to the Pacific Portland Cement Company in 1924. The Pacific Portland Cement Company added a plaster manufacturing plant to the ore crusher, which became Plaster City, and operated the Quarry until the mid-1940s (Tucker 1926:271, cited in Pacific Legacy 2018). In 1947, the Plaster City Quarry and the Plaster City Railroad were purchased by USG, which continues to own and operate the Quarry and its facilities. USG modernized quarry operations by adding a 900-foot belt and two kilns among other improvements. During the 1940s-1960s, the Plaster City Plant (P-13-009303) produced plaster board, sacked lath, and plaster for agricultural purposes (URS 2010:2-32).

Locus 1 (formerly USG-01)

Locus 1 was first recorded in 2002 as a U-shaped, dry laid stacked stone structure with an interior hearth and a historic period debris scatter. When it was revisited in 2018, its condition was found largely unchanged as the stone structure remained standing, the fire pit was relocated, and the historic period debris noted in 2002 was present. A dirt road enters the locus from the northeast and the east end features multiple bulldozer tracks. A cluster of cans with bullet holes, likely used for target practice, also were noted. One oval-shaped tobacco tin with a hinged lid with a striker plate was observed as well as many condensed milk tins. Artifacts remain scattered about the locus with a few areas featuring more concentrated materials. The area has been somewhat impacted by aeolian erosion, which has likely buried and/or unearthed some of the historic period debris. USG personnel noted that Locus 1 had been used in the past by quarry employees as a recreational or gathering area.

Plaster City Railroad (P-13-008139) (CA-IMP-7739H)

P-13-008139 was originally documented in 1998 as a 4,920-foot segment of the 27-mile-long historic period Plaster City Railroad as it approaches its southern terminus at the Plaster City Plant. Also included as a part of the resource was a prehistoric site component including midden soils, hearths, fire altered rock, pottery, groundstone, flaked stone, faunal and fish bone fragments, bedrock mortars, a rock cairn, a coprolite specimen, and a few metal fragments, possibly from a flintlock or sidelock. This prehistoric component was recorded along the railroad alignment over 5 miles southeast of proposed Well No. 3 and well outside of the current Project APE. The prehistoric component was, therefore, not revisited during the 2018 investigation. In 2009, a portion of P-13-008139 near the Plaster City Plant was recorded and evaluated for listing in the NRHP and CRHR. The recorded portion of the resource was not found to be eligible for listing in the NRHP and CRHR as an individual resource and/or as a possible contributor to the larger railway alignment.

An approximate 3.45-mile segment of the narrow-gauge railroad alignment was recorded in 2018 as it extends from the Quarry towards proposed Well No. 3 within the Project APE for the pipeline alignment. The railroad alignment features rails that are 36 inches apart and are supported by wooden ties. Ten features associated with the alignment were documented in 2018, including nine maintenance offset tracks and one large culvert with horizontally aligned drainpipes. A remnant telegraph line also was documented along the railroad grade. The remaining portion of the Plaster City Railroad alignment, which was not recorded in 2018, continues generally south before terminating at the Plaster City Plant. The Plaster City Plant and Plaster City Railroad were planned and built between 1920 and 1921, though it was noted in a 2009 recording of the southern portion of the alignment that many of the tie plates and joint bars have been replaced and the rails have apparently been replaced to support heavier loads.

Field Investigation

The BLM requires that areas not subject to cultural resources inventory survey for over 10 years be re-examined. Thus, areas that were investigated for the project in 2002 were again inventoried in 2018. The Class III pedestrian surface survey was conducted using transects of no more than 15 meters. The survey involved both the relocation of previously recorded resources and the identification and recordation of newly identified archaeological sites and isolated finds. All identified sites and resources in the project APE are summarized in Table 4.3-1, "Cultural Resource Sites and Resources in Proximity to Project Site."

Both previously recorded historic sites in the APE (Plaster City Quarry and Locus 1, Plaster City Railroad P-13-008139) were relocated during the 2018 pedestrian survey. The small prehistoric scatter of Yuma Desert Ware was not relocated; the area is in an active mining zone and has been completely disturbed.

Cultural resources newly identified and recorded during the survey include two prehistoric archaeological sites, 13 prehistoric isolated finds, and nine historic period isolated finds. Nineteen of these resources, including both archaeological sites and 17 isolated finds, were noted within the Quarry while three were found along the proposed pipeline alignment or the area encompassing proposed Well No. 3. Each of these resources is summarized in Table 4.3-1, and both archaeological sites are further described below.

Table 4.3-1
Cultural Resource Sites and Resources in Proximity to Project Site

Resource Designation	Site Type	Description	Author	Date	Proximate Project Component
PREVIOUSLY RECORDED SITES—RELOCATED ON PROJECT SITE					
P-13-008139 CA-IMP-7739H Plaster City Railroad Project	Historic (previously multi-component)	As determined by the site revisit, the previously recorded prehistoric component should be documented as a separate site and removed from this record (which has been updated to Historic only). That component consists of a lithic scatter, groundstone, fire-affected rock, midden, cairns, fish and mammal bone, 300+ potsherds, and a coprolite of unknown date. The previously recorded historic component consists of a portion of the 27-mile narrow gauge US Gypsum Rail Line (which traveled between the mine and plant), locomotives, 11 drainage culverts, a railroad bridge (1922) over Carrizo Wash, and a possible iron flintlock/sidelock. This recording effort documented a 300-foot portion of the railroad line at the north end. Ten features associated with the railroad line were documented (nine maintenance offset tracks; one large culvert with drain pipes aligned horizontally), and a remnant telegraph line along the grade.	Shapiro, O'Neill, Cappetta	2018	Quarry; Pipeline alignment
Plaster City Quarry	Historic	The resource was originally documented in 2002 (Holmes) as being a functioning quarry since 1902, modernized after purchase by US Gypsum in 1946; however, the record was never submitted to the Information Center for P# assignment. The quarry appears as previously described, although the active mining area may now be more extensive. A U-shaped dry-laid stacked stone structure with an interior hearth and a historic period debris scatter was documented within the quarry in 2002 and found to be unchanged in 2018. It contains hinged lid tobacco tins and many condensed milk cans. A dirt road enters the site at the northeast, and bulldozer tracks are present in addition to signs of erosion and target shooting.	Shapiro, O'Neill, Sprague	2018	Quarry

Resource Designation	Site Type	Description	Author	Date	Proximate Project Component
PREVIOUSLY RECORDED SITES—NOT RELOCATED ON PROJECT SITE					
P-13-000001 CA-IMP-1	Prehistoric	Scatter of Yuma Desert Ware potsherds. Site was not relocated; the area is in an active mining zone and completely disturbed.	Shapiro, O'Neill, Sprague	2018	Quarry
NEWLY IDENTIFIED AND RECORDED SITES					
PLI-2018-1	Prehistoric	Lithic scatter of a few quartz flakes, an edge-modified flake, handstone, milling slab fragment, at least 50 ceramic sherds, two possible hearth features, and a gypsum outcrop overhang feature.	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-2	Prehistoric	Discrete scatter of at least 26 ceramic fragments, appearing to be from a single vessel. The site is heavily impacted from OHVs and target shooting.	Shapiro, O'Neill, Sprague	2018	Quarry
NEWLY IDENTIFIED ISOLATED FINDS					
PLI-2018-ISO-1	Prehistoric	Isolate assayed/shattered quartz cobble	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-2	Prehistoric	Isolate quartz Desert Side-notched projectile point.	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-5	Prehistoric	Isolate quartz shatter from an assayed cobble.	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-6	Prehistoric	Isolate assayed quartz cobble with shatter.	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-7	Prehistoric	Isolate assayed quartz cobble with shatter	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-8	Prehistoric	Isolate assayed quartz cobble shatter	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-9	Prehistoric	Isolate assayed quartz cobble shatter	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-10	Historic	Isolate brass cap US GLO survey marker (1921)	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-11	Historic	Isolate brass cap US GLO survey marker (1916) set in mound of boulders; three other large boulder mounds and two tobacco tins located nearby.	Shapiro, O'Neill, Sprague	2018	Quarry
PLI-2018-ISO-12	Prehistoric	Isolate assayed quartz cobble and shatter.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-13	Historic	Two isolate rock cairns separated by a cut, one with a brass cap US GLO survey marker (1921); the other with a tobacco tin and knife-opened sanitary can.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-14	Historic	Isolate brass cap US GLO survey marker (1921) in a rock cairn, with a Kerr Mason jar containing 1994 claim papers and two wooden lath pieces	Shapiro, O'Neill, Cappetta	2018	Quarry

Resource Designation	Site Type	Description	Author	Date	Proximate Project Component
PLI-2018-ISO-15	Historic	Isolate rock cairn with PVC pipe in the center, an "X" aerial target made from reflective cloth crossing through it, and Sir Walter Raleigh tobacco tin.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-16	Historic	Isolated historic and modern debris scatter of auto parts, melted window and bottle glass, charcoal and slag.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-17	Historic	Isolate cylindrical steep pipe water well head with welded steel cap; bullet holes present.	Shapiro, O'Neill, Cappetta	2018	Pipeline Alignment
PLI-2018-ISO-18	Prehistoric	Isolate ceramic sherd with scratch lines.	Shapiro, O'Neill, Cappetta	2018	Pipeline Alignment
PLI-2018-ISO-19	Historic	Isolate knife-opened holes-in-top can with bullet holes.	Shapiro, O'Neill, Cappetta	2018	Pipeline Alignment
PLI-2018-ISO-20	Prehistoric	Isolate of three ceramic sherds from the same vessel.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-21	Prehistoric	Isolate ceramic sherd.	Shapiro, O'Neill, Cappetta	2018	Quarry
PLI-2018-ISO-22	Prehistoric	Isolate assayed quartz cobble shatter	Shapiro, O'Neill, Cappetta	2018	Quarry

PLI-2018-1

PLI-2018-1 is a prehistoric site that was first encountered in 2018 at the extreme southern end of the Quarry adjacent to and upslope from a meandering draw. The site encompasses two hearth features (Features 1 and 2), a rock overhang, a ceramic scatter (Feature 3), one granitic milling slab fragment (Artifact 1), a granitic handstone (Artifact 2), an edge-modified flake (Artifact 3), and a few quartz flakes.

- Feature 1 consists of a granitic rock circle containing charcoal and lightly blackened soil that measures 2 meters north-south and 1.6 meters east-west. It has been impacted by aeolian erosion and is slightly deflated but may be at least 2 centimeters deep. It was unclear if the feature represented a prehistoric, historic period, or modern fire ring.
- Feature 2 is a rock concentration with charcoal-stained soils that also may represent a prehistoric hearth, though its age remains uncertain. It measures 1.8 meters north-south and 1.9 meters east-west. It is located within the wash to the southwest of Feature 1.
- Feature 3 is an overhang upslope from Feature 1. It is in a gypsum outcrop with a talus slope of gypsum blocks emanating from the outcrop. The overhang is deep enough to crawl into, and the floor is comprised of a light-colored gypsum soil. The overhang measures 1.25 meters high at the left side of the opening and 0.8 meters high at the right side of the opening. The overhang is 3.95 meters wide and 2.8 meters deep. Pottery sherds were found at the opening of the overhang and charcoal was scattered mostly at the edge of the overhang and downslope to Feature 1, but also to the east of the opening on the slope.

At least 50 pottery fragments were found at PLI-2018-1, most scattered downslope between Features 1 and 3. Two fragments were found in the draw on the southeast side of the site. Three fragments also were found in the southwestern portion of the site. At least two ceramic types were observed—Brownware with a light orange interior and tan exterior with these colors reversed in some instances and a reddish and tan pottery. All recorded ceramics were body sherds, many of which were curved. The tan and orange pottery were 4-5 centimeters thick and the largest fragments measured 8 by 10 centimeters. The reddish pottery was 5-6 centimeters thick and was more fragmented. Many sherds of both types displayed blackening. The granitic milling slab fragment was found on a slope near Artifact 2 and measured 29 (l) by 19 (w) by 7 (th) centimeters. The milling surface measured 13 by 13 centimeters. The granitic handstone was complete and measured 12 (l) by 9 (w) by 6 (th) centimeters. The edge modified flake was made from quartz and featured flake scars all along one margin. PLI-2018-1 crosses the Project APE for an unnamed wash or draw that witnesses seasonal rains. On-site vegetation includes creosote, ocotillo, barrel cactus and other shrubs. Gypsum outcrops are present in and around the area.

PLI-2018-2

PLI-2018-2 is a prehistoric site that was first encountered in 2018 near the southern end of the parcel that encompasses proposed Well No. 3 and a portion of the associated pipeline alignment. The site comprises a discrete pottery scatter with at least 26 sherds. Twenty sherds were recorded within a 2-meter radius in a low area of compacted sand that had been impacted by alluvial erosion. Six other ceramic sherds were found scattered to the east. Other fragments may be present and have likely been buried or displaced by alluvial action. The pottery fragments appeared to be from a single vessel. The exterior of each sherd was characterized by the same red/brown color while the interior was buff colored with gray to black temper. No rim fragments were found, and all appeared to be body sherds with slight curvature. The sherds ranged in size from 1.5-5.5 centimeters and were 0.4-0.5 centimeters in thickness. The area surrounding PLI-2018-2 has been heavily disturbed by OHV activity as well as alluvial and aeolian erosion. The area also has been used for recreational shooting, evidenced by numerous skeet fragments, ammunition cartridges and casings, and glass shards as well as other modern debris.

Viking Ranch Restoration Site

A record search for potential cultural resources was conducted by Dudek archeologists for the Viking Ranch Restoration Site. No cultural resources have been recorded on the site or within a 1-mile buffer area.

Old Kane Springs Road Preservation Site

The Old Kane Springs Road Preservation Site is undeveloped open space with no structures or other improvements.

4.3.2 Regulatory Setting

The following sections discuss federal, State, and local regulations pertaining to biological resources that warrant consideration during the environmental review of the project.

4.3.2.1 Federal

Relevant federal, state, and local programs and policies relating to cultural resources that apply to the proposed project are discussed below.

Section 106 of the National Historic Preservation Act of 1966

The National Historic Preservation Act (NHPA) establishes the nation's policy for historic preservation and sets in place a program for the preservation of historic properties by requiring Federal agencies to consider effects to significant cultural resources (i.e., historic properties) prior to undertakings. Section 106 of the NHPA states that Federal agencies with direct or indirect jurisdiction over Federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) and that the Advisory Council on Historic Preservation (ACHP) and State Historic Preservation Officer (SHPO) must be afforded an opportunity to comment on such undertakings, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800.

National Register of Historic Places

The NRHP was established by the NHPA of 1966 as an authoritative guide to be used by Federal, State, and Local governments, private groups, and citizens to identify the United States' cultural resources and to indicate what properties should be considered for protection from destruction or impairment. The NRHP recognizes properties that are significant at the national, State, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, or association. A property is eligible for the NRHP if it is significant under one or more of the following criteria as defined by NRHP:

- *Criterion A:* It is associated with events that have made a significant contribution to the broad patterns of our history.
- *Criterion B:* It is associated with the lives of persons significant in our past.
- *Criterion C:* It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master, possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.
- *Criterion D:* It has yielded, or may be likely to yield, information important in prehistory or history.

In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

4.3.2.2 State

California Environmental Quality Act

Pursuant to the California Environmental Quality Act (CEQA), a historical resource is a resource listed in, or eligible for listing in, the California Register of Historical Resources (CRHR) (CEQA Guidelines Section 15064.5). In addition, resources included in a local register of historic resources or identified as "significant" in a local survey conducted in accordance with State guidelines are also considered historic resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR or is not included in a local register or survey shall not preclude a Lead Agency, as defined by CEQA, from determining that the resource may be a historic resource as defined in California Public Resources Code (PRC) Section 5024.1.

CEQA applies to archaeological resources when: (1) the archaeological resource satisfies the definition of a historical resource, or (2) the archaeological resource satisfies the definition of a "unique archaeological resource." A unique archaeological resource is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:

1. The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
2. The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

Finally, CEQA Guidelines Section 15064.5(e) and (f) provides measures to protect historic resources, archeological resources, and human remains (in any location other than a dedicated cemetery) from disturbance, vandalism, or inadvertent destruction.

California Register of Historical Resources

Created in 1992 and implemented in 1998, the CRHR is:

> "an authoritative guide in California to be used by State and local agencies, private groups, and citizens to identify the state's historical resources and to indicate properties that are to be protected, to the extent prudent and feasible, from substantial adverse change."

Certain properties, including those listed in or formally determined eligible for listing in the NRHP and California Historical Landmarks (CHLs) numbered 770 and higher, are automatically included in the CRHR. Other properties recognized under the California Points of Historical Interest program, identified as significant in historic resources surveys, or designated by local landmarks programs may be nominated for inclusion in the CRHR. A resource, either an individual property or a contributor to a historic district, may be listed in the CRHR if the State Historical Resources Commission determines that it meets one or more of the following criteria (modeled after NRHP criteria):

- *Criterion 1:* It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- *Criterion 2:* It is associated with the lives of persons important in our past.
- *Criterion 3:* It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.
- *Criterion 4:* It has yielded, or may be likely to yield, information important in history or prehistory.

Resources nominated to the CRHR must retain enough of their historic character or appearance to be recognizable as historic resources and to convey the reasons for their significance. It is possible that a resource whose integrity does not satisfy NRHP criteria may still be eligible for listing in the CRHR. A resource that has lost its historic character or appearance may still have sufficient integrity for the CRHR if, under Criterion 4, it maintains the potential to yield significant scientific or historical information or specific data. Resources that have achieved significance within the past 50 years also may be eligible for inclusion in the

CRHR, provided that enough time has lapsed to obtain a scholarly perspective on the events or individuals associated with the resource.

California Native American Graves Protection and Repatriation Act of 2001

Codified in the California Health and Safety Code Sections 8010–8030, the California NAGPRA is consistent with the Federal NAGPRA. Intended to "provide a seamless and consistent State policy to ensure that all California Indian human remains and cultural items be treated with dignity and respect," the California NAGPRA also encourages and provides a mechanism for the return of remains and cultural items to lineal descendants. Section 8025 established a Repatriation Oversight Commission to oversee this process. The Act also provides a process for non-Federally recognized tribes to file claims with agencies and museums for repatriation of human remains and cultural items.

California Public Resources Code Section 5097

Public Resources Code (PRC) Section 5097 defines and protects Archaeological, Paleontological and Historical sites. Under PRC 5097, an archaeological site survey may be conducted to determine archaeological, paleontological, or historical features. PRC Section 5097.5 prohibits the removal, destruction, injury, or defacement of archaeological and paleontological features on any lands under the jurisdiction of state or local authorities. PRC 5097.9 states that no public agency or private party on public property shall "interfere with the free expression or exercise of Native American Religion." The code further states that: No such agency or party [shall] cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine…except on a clear and convincing showing that the public interest and necessity so require.

California Health and Safety Code Section 7050.5, 7051, and 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

4.3.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan Conservation Element* pertains to cultural resources for the proposed project:

Conservation and Open Space Element

Goal 3: Preserve the spiritual and cultural heritage of the diverse communities of Imperial County.

Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

Objective 3.3: Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.

Imperial County Surface Mining Ordinance

The Imperial County Surface Mining Ordinance was enacted to ensure the continued availability of important mineral resources, while regulating surface mining operations as required by SMARA, Public Resources Code (PRC) Section 2207, and state regulations for surface mining and reclamation practice (California Code of Regulations [CCR], Title 14, Division 2, Chapter 8, Subchapter 1, Sections 3500 et seq.), to ensure prevention or mitigation of adverse effects on the environment, including damage to archaeological and historical resources.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation and Open Space Element* relate to cultural resources and apply to the proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-7: Protection and Preservation of Archaeological Resources. Protection and preservation of the County's important archeological resources for their cultural importance to local communities, as well as their research and educational potential.

Policy COS-7.1: Archaeological Protection. Preserve important archaeological resources from loss or destruction and require development to include appropriate mitigation to protect the quality and integrity of these resources.

Policy COS-7.2: Open Space Easements. Require development to avoid archeological resources whenever possible. If complete avoidance is not possible, require development to fully mitigate impacts to archaeological resources.

Policy COS-7.3: Archaeological Collections. Require the appropriate treatment and preservation of archaeological collections in a culturally appropriate manner.

Policy COS-7.4: Consultation with Affected Communities. Require consultation with affected communities, including local tribes to determine the appropriate treatment of cultural resources.

Policy COS-7.5: Treatment of Human Remains. Require human remains be treated with the utmost dignity and respect and that the disposition and handling of human remains will be done in consultation with the Most Likely Descendant (MLD) and under the requirements of Federal, State and County Regulations.

4.3.3 Significance Criteria and Analysis Methodology

4.3.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's cultural resources impacts using the following significance criteria:

The project would be considered to have a significant effect on cultural resources if it would:

- Disturb cultural resources that are either listed or eligible to be listed in the NRHP; as registered or eligible to be registered as a state Historic Landmark; or included in any responsible local inventory of historical properties;
- Disturb previously unknown important archaeological or historical resources;
- Have the potential to cause physical change which would affect unique ethnic cultural values; or,
- Restrict existing religious or sacred uses within the potential impact area.

CEQA Appendix G Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5;
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5;
c) Disturb any human remains, including those interred outside of dedicated cemeteries.

4.3.3.2 Analysis Methodology

The evaluation of potential impacts to cultural resources is based on the findings of the 2018 CRR (Appendix E). Through a combination of a comprehensive records search for previously identified cultural resources and a field investigation to identify and record newly discovered resources the 2018 CRR confirmed the location of significant cultural resources within the APE for the project. Based on this information, the proposed locations of project activities were compared to determine potential impacts to resources.

4.3.4 Project Impacts and Mitigation Measures

4.3.4.1 2008 EIR/EIS Impact Analysis

The 2008 EIR/EIS determined that impacts to known prehistoric and historic resources within the USG Expansion/Modernization Project area would be less than significant. However, it was noted that excavation in previously undisturbed areas could uncover unknown resources. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to unknown cultural resources:

> ***Mitigation Measure 3.8-3:*** *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume*

> *only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented.*

4.3.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) and provided the following mitigation measures to address the potential for inadvertent discovery of unknown cultural resources on the project site.

> ***Mitigation Measure 3.6-1:** Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.*
>
> ***Mitigation Measure 3.6-2:** Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way. A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.*

4.3.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to cultural resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

No changed circumstances related to the project would create a new or increased significant impact related to cultural resources.

New Information

The BLM requires that areas not subject to cultural resources inventory survey for over 10 years must be re-examined. Therefore, areas that were investigated for the USG Expansion/Modernization Project in 2002 were again inventoried in 2018. An updated Cultural Resources Report (2018 CRR) was completed as part of the 2019 SEIS. The 2018 CRR included an archival and records search and a pedestrian inventory of the USG Expansion/Modernization Project APE. As a result of the pedestrian survey, 18 cultural resources were newly discovered including one archaeological site and 17 isolated finds within the Quarry and one prehistoric archaeological site and three isolated finds within the well site and associated pipeline alignment.

Significance Determination

Based on project revisions that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.3.4.4 Subsequent Environmental Analysis

Impact 4.3-1: The Project Could Cause a Substantial Adverse Change in the Significance of a Historical Resource Pursuant to §15064.5.

Quarry, Well No. 3, and Associated Pipeline

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. As these project components would remain essentially unchanged, no new or more severe impacts would occur to cultural resources under the proposed project. However, the following discussion provides an evaluation of new information regarding the presence of cultural resources in the project area that has become available with completion of the 2018 CRR.

As described in the 2018 CRR (Pacific Legacy 2018) and 2019 SEIS, there are two previously recorded historical resource sites currently present in the APE for the Quarry, Well No. 3, and associated pipeline: (1) the Quarry, which encompasses numerous isolated finds and a small u-shaped historic period stone structure with debris (Locus 1) and, (2) the Plaster City Railroad (P-13-008139). These are central components to the Quarry operation that remain in continuous operation, are properly maintained, and would not be adversely affected by project implementation. The proposed pipeline would be constructed parallel to a segment of the Plaster City Railroad but, according to the 2018 CRR, the project would avoid impacts to this historical resource site. Furthermore, the railroad is routinely subject to physical use and alteration as a result of operation, maintenance, and repair. For example, many of the tie plates and joint bars have been replaced and the rails have been replaced entirely to support heavier loads (Pacific Legacy 2018). Thus, a significant impact would occur only if the project adversely affected the historical context of the railroad as a whole, and not as a result of physical modification of one segment. As the project is not expected to affect either the railroad itself or its historical context within the project area, no impact would occur to this historical resource.

During the 2018 pedestrian survey, two prehistoric archaeological sites (PLI-2018-1 and PLI-2018-2) and 17 prehistoric and historic period isolated finds were identified and recorded within the Quarry while three isolated finds were identified and recorded within the proposed pipeline alignment or the area encompassing proposed Well No. 3. Neither of the prehistoric archaeological sites (PLI-2018-1 and PLI-2018-2) has been evaluated for listing in the NRHP. PLI-2018-1 consists of a lithic and ceramic scatter with overhang rock shelter located within jurisdictional waters in the Quarry. The 2018 CRR determined that this site is not likely to be disturbed by project activities as it lies within jurisdictional waters on the edge of Quarry boundaries and away from active mining areas. PLI-2018-2 consists of a ceramic scatter located near the site of proposed Well No. 3. The 2018 CRR determined that this site would not be affected by the project. Isolated cultural resources are not eligible for listing in the NRHP and, therefore, are not considered further in this evaluation.

Inadvertent discoveries of unknown resources and/or unanticipated damage to resources could occur during ground disturbing activities carried out as part of the proposed project. The project is subject to 2008 EIR/EIS Mitigation Measure 3.8-3 which, in the event a potential resource is encountered during construction, requires work to halt and a qualified archaeologist to assess and properly manage the find. The 2018 CRR recommends additional mitigation to more comprehensively protect discovered resources by requiring construction monitoring during all ground disturbing activities. These recommended measures were included in the 2019 SEIS as Mitigation Measures 3.6-1 and 3.6-2. Implementation of these existing mitigation measures would address the potential for inadvertent discovery of cultural resources on the project site and reduce this impact to below a level of significance.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.3.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.8-3*
- *2019 SEIS:*
  - *Mitigation Measure 3.6-1*
  - *Mitigation Measure 3.6-2*

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

The cultural resources records search conducted for the Viking Ranch Restoration site failed to identify any previous cultural resource studies or recorded cultural resources on the Viking Ranch site or within a one-mile buffer area. There is, however, potential for restoration activities to disturb previously undiscovered cultural resources. Implementation of Mitigation Measures 4.3-1 below would reduce this impact to below a level of significance.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure: *Implement the following new mitigation measure:*

Mitigation Measure 4.3-1: *Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Viking Ranch APE shall be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. The Plan shall describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from project impacts. It shall also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during project implementation.*

Level of Significance After Mitigation: Less than significant.

Old Kane Springs Road Preservation Site

The proposed project does not include any ground disturbing activities on the Old Kane Springs Road Preservation Site and would have no potential to disturb unknown subsurface cultural resources.

Level of Significance: No Impact.

Mitigation Measures: None required.

Impact 4.3-2: The Project Could Cause a Substantial Adverse Change in the Significance of an Archaeological Resource Pursuant to §15064.5.

Quarry, Well No. 3, and Associated Pipeline

According to the 2018 CRR, there is one previously recorded archaeological resource within the project APE. The Yuman Desert Ware (P-13-000001), which consisted of a potsherd scatter, could not be relocated during the 2018 pedestrian survey of the Quarry. Given the highly disturbed condition of its recorded location within an active quarry area, it is presumed that this site is no longer present in the APE. Multiple isolated finds were also identified within the project APE; however, isolated finds are not eligible for the NRHP, and these resources are not evaluated further in this SEIR.

Inadvertent discoveries of currently unknown resources and/or unanticipated damage to resources could occur during ground disturbing activities carried out as part of the proposed project. Implementation of existing Mitigation Measures 3.8-3, 3.6-1, and 3.6-2 would reduce this impact to a less than significant level by requiring worker awareness training, avoidance measures, and monitoring during earthmoving activities.

Level of Significance Before Mitigation: Less than significant

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.3.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.8-3*
- *2019 SEIS:*
  - *Mitigation Measure 3.6-1*
  - *Mitigation Measure 3.6-2*

Level of Significance After Mitigation: Less than significant

Viking Ranch Restoration Site

The cultural resources records search conducted for the Viking Ranch Restoration Site failed to identify any previous cultural resource studies or recorded cultural resources on the Viking Ranch site or within a one-mile buffer area. There is potential, however, for restoration activities to disturb previously undiscovered cultural resources. Implementation of Mitigation Measure 4.3-1 would reduce this impact to below a level of significance.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measure: *Implement Mitigation Measure 4.3-1.*

Level of Significance After Mitigation: Less than significant.

Old Kane Springs Road Preservation Site

The proposed project does not include any ground disturbing activities on the Old Kane Springs Road Preservation Site and would have no potential to disturb unknown subsurface cultural resources at this location.

Level of Significance: No Impact.

Mitigation Measure: None required.

Impact 4.3-3: The Project Could Disturb Any Human Remains, Including Those Interred Outside of Dedicated Cemeteries

According to the cultural resources studies and records searches conducted for the project, there are no recorded cemeteries or burial sites within the project APE or on the Viking Ranch Restoration Site. However, as discussed previously, project ground-disturbing activities could disturb unknown burial sites and human remains. San Diego County General Plan Policy COS-7.5 requires that the disposition and handling of human remains be done in consultation with the Most Likely Descendent (MLD) and in accordance with federal, state and local law. Mitigation Measure 4.3-2 provides further, more detailed requirements for the handling of inadvertently discovered human remains. Implementation of Mitigation Measure 4.3-2 would reduce this impact below a level of significance.

Level of Significance Before Mitigation: Potentially significant

Mitigation Measure: *Implement the following new mitigation measure:*

Mitigation Measure 4.3-2: *Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project activities, the project operator shall immediately halt work within 50 feet of the find, contact the Imperial County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.4(e)(1). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, with the MDL regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*

Level of Significance After Mitigation: Less than significant.

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SECTION 4.4:
GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

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SECTION 4.4:
GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES

This section of the subsequent environmental impact report (SEIR) describes the local and regional geologic and paleontological conditions that occur in the vicinity of the project sites. These conditions are described and evaluated to ensure that project activities would not adversely affect significant paleontological resources.

The information in this section is based primarily on the following technical study prepared to support the 2019 SEIS:

- *Paleontological Technical Study United States Gypsum Company Expansion/Modernization Project,* Paleo Solutions, Inc., May 15, 2018 (see Appendix F, “Paleontological Technical Study”)

4.4.1 Environmental Setting

4.4.1.1 Geology, Seismicity and Soils

The Quarry and site of proposed Well No. 3 and associated pipeline alignment are in western Imperial County within the Colorado Desert, which lies at relatively low elevations, in some places below sea level. This region is characterized by a series of low-lying mountains associated with the Peninsular Range, opening up to the Imperial Valley and Salton Trough to the east. The geology in the area of the Quarry consists primarily of nearly pure beds of Miocene-age gypsum. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation (also referred to as the Split Mountain Group), Fish Creek Gypsum, and Pliocene marine Imperial Formation (also referred to as the Imperial Group), which are unconformably underlain by Mesozoic intrusive igneous rocks.

There are three major fault zones in the vicinity of the Quarry and site of proposed Well No. 3 and associated pipeline: (1) the San Andreas fault zone to the northeast, which runs along the east side of the Salton Sea; (2) the San Jacinto fault zone which traverses western Imperial County through the Peninsular Ranges and into the Borrego Valley and West Mesa, and (3) the Elsinore fault zone to the southwest. The Coyote Creek fault, which runs through Ocotillo Wells and skirts the Fish Mountains east of the Quarry, is associated with the San Jacinto fault zone. The Quarry is located between the San Jacinto and Elsinore fault zones.

No significant changes in the regional or local geology of the project area have occurred since the 2008 EIR/EIS was prepared.

4.4.1.2 Paleontological Resources

Paleontological Sensitivity Rating

Paleontological sensitivity is a qualitative assessment based on the paleontological potential of the stratigraphic units present, the local geology and geomorphology, and other factors relevant to fossil preservation and potential yield.

The BLM assigns geologic units a Potential Fossil Yield Classification (PFYC) class based on the probability and abundance of known vertebrate fossils and scientifically significant invertebrate and plant fossils. The PFYC scheme ranges from very low (PFYC 1) to very high (PFYC 5) depending on the potential fossil yield:

- *PFYC Class 1:* Very Low. Geologic units that are not likely to contain recognizable fossil remains.
  - Units that are igneous or metamorphic, excluding reworked volcanic ash units.
  - Units that are Precambrian in age or older.
- *PFYC Class 2:* Low. Sedimentary geologic units that are not likely to contain vertebrate fossil remains or scientifically significant invertebrate fossils.
  - Vertebrate or significant invertebrate or plant fossils are not present or are very rare.
  - Units that are generally younger than 10,000 years before present.
  - Recent aeolian deposits.
  - Sediments that exhibit significant physical and chemical changes.
- *PFYC Class 3:* Moderate. Fossiliferous sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence.
  - Often marine in origin with sporadic known occurrences of vertebrate fossils.
  - Vertebrate fossils and scientifically significant invertebrate or plant fossils known to occur intermittently.
  - Predictability known to be low, but is somewhat higher for common fossils.
- *PFYC Class 4:* High. Geologic units containing a high occurrence of significant fossils. Vertebrate fossils or scientifically significant invertebrate or plant fossils are known to occur and have been documented but may vary in occurrence and predictability. Surface disturbing activities may adversely affect paleontological resources in many cases.
- *PFYC Class 5:* Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate fossils or scientifically significant invertebrate or plant fossils, and that are at risk of human-caused adverse impacts or natural degradation.

Unknown fossil potential (PFYC U) is assigned to geologic units that do not have a clear PFYC assignment. Typically, paleontological resource compliance is required for earthwork occurring within PFYC classes 3, 4, 5, or U rock units.

Paleontological Sensitivity of the Project Site

Geologic mapping indicates that the area of the Quarry, Well No. 3, and associated pipeline is underlain by Mesozoic-age or older, undivided intrusive igneous rocks (gr); Miocene-age Split Mountain Group Red Rock Formation (Tsr), and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Fish Creek Gypsum (Tfc); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til), and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); Holocene-age Lake Cahuilla beds (Qlc); Holocene-age alluvial terrace deposits (Qt); and Holocene-age alluvium, undivided (Qa) (Paleo Solutions 2018).

According to the 2018 Paleontological Technical Study (Appendix F), the Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); and Holocene-age Lake Cahuilla beds (Qlc) have PFYC classes of 3, 4, and U indicating moderate to high or unknown potential to contain paleontological resources. The Fish Creek Gypsum (Tfc), alluvial terrace deposits (Qt), alluvium (undivided) (Qa), artificial fill, and previously disturbed sediments have lower PFYC classes and are unlikely to contain significant fossil vertebrate remains (Paleo Solutions 2018). Figures

4.4-1a and 4.4-1b, “Geologic Map with Paleontological Sensitivity,” show the PFYC classes within and surrounding the project site.

4.4.2 Regulatory Setting

The following sections discuss federal, state, and local regulations pertaining to geology and soils.

4.4.2.1 Federal

Paleontological Resources Preservation Act

Paleontological Resources Preservation Act (PRPA) was signed into law on March 30, 2009 (Public Law 111-11, Title VI, Subtitle D; 16 U.S.C. §§ 470aaa—470aaa11). PRPA directs the Department of Agriculture (U.S. Forest Service) and the Department of the Interior (National Park Service, BLM, Bureau of Reclamation, and Fish and Wildlife Service) to implement comprehensive paleontological resource management programs. With passage of the PPRA, Congress officially recognizes the importance of paleontological resources on federal lands by declaring that fossils from federal lands are federal property that must be preserved and protected using scientific principles and expertise. The PRPA provides: 1) uniform definitions for “paleontological resources” and “casual collecting”; 2) uniform minimum requirements for paleontological resource use permit issuance; 3) uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands; and 4) uniform requirements for curation of federal fossils in approved repositories.

4.4.2.2 State

California Environmental Quality Act

Paleontological resources are afforded protection by environmental legislation set forth under CEQA. Appendix G (part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, indicating that a project will have a significant impact on paleontological resources if it will disturb or destroy a unique paleontological resource or site or unique geologic feature.

California Public Resources Code, Section 5097.5

This law protects historic, archaeological, and paleontological resources on public lands within California and establishes criminal and civil penalties for violations. Specifically, PRC Section 5097.5 states:

“(a) No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. (b) As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.”

California Penal Code, Section 622.5

California Penal Code, Section 622.5 sets the penalties for damage, destruction, or removal of paleontological resources on private and public land.

4.4.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The Conservation and Open Space Element does not provide any policies or requirements for paleontological resources. However, the following policy regarding unique geologic features is provided:

Conservation and Open Space Element

Goal 4: The County will identify and protect geologic, soil, aggregate, and mineral resources for extraction while minimizing the effect of mining on surrounding land uses and other environmental resources.

Objective 4.5: Preserve significant geologic features such as rock outcroppings, the Algodones Dunes, Imperial Sand Dunes, Salton Buttes, and Shell Beds in Yuha Basin.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to air quality and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-9: Educational and Scientific Uses. Paleontological resources and unique geologic features conserved for educational and/or scientific purposes.

Policy COS-9.1: Preservation. Require the salvage and preservation of unique paleontological resources when exposed to the elements during excavation or grading activities or other development processes.

Policy COS-9.2: Impacts of Development. Require development to minimize impacts to unique geological features from human related destruction, damage, or loss.

4.4.3 Significance Thresholds and Analysis Methodology

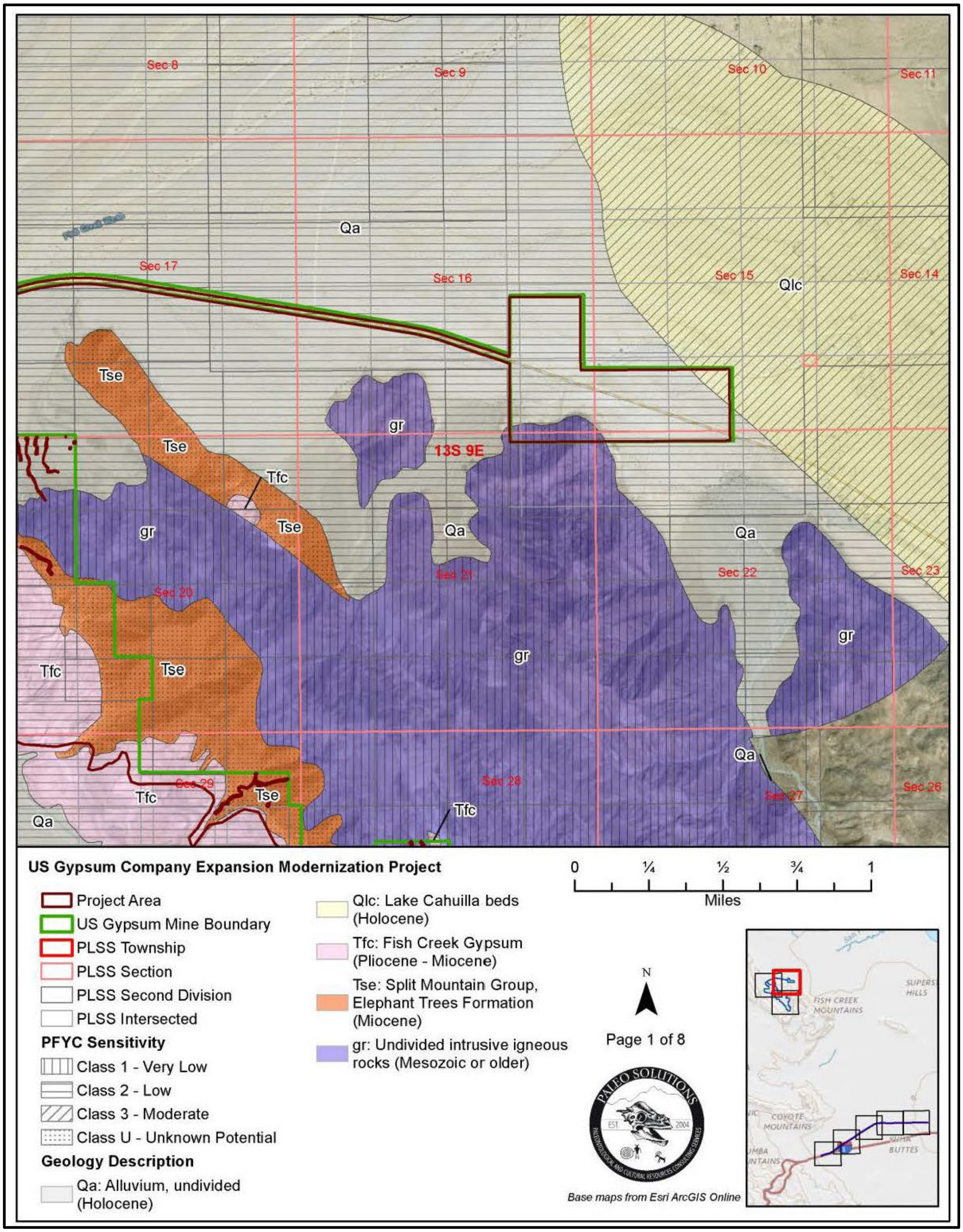
4.4.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's air quality impacts using the following significance criteria:

The proposed project would have a significant geologic impact if it would result in the following:

- Create a substantial geologic hazard, which could affect workers or other persons in the Project are or substantially damage structures; or
- Substantially restrict the future ability to utilize paleontological resources.



SOURCE: PaleoSolutions 2018; Figure A-1
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.4-1a
Geologic Map with Paleontological Sensitivity

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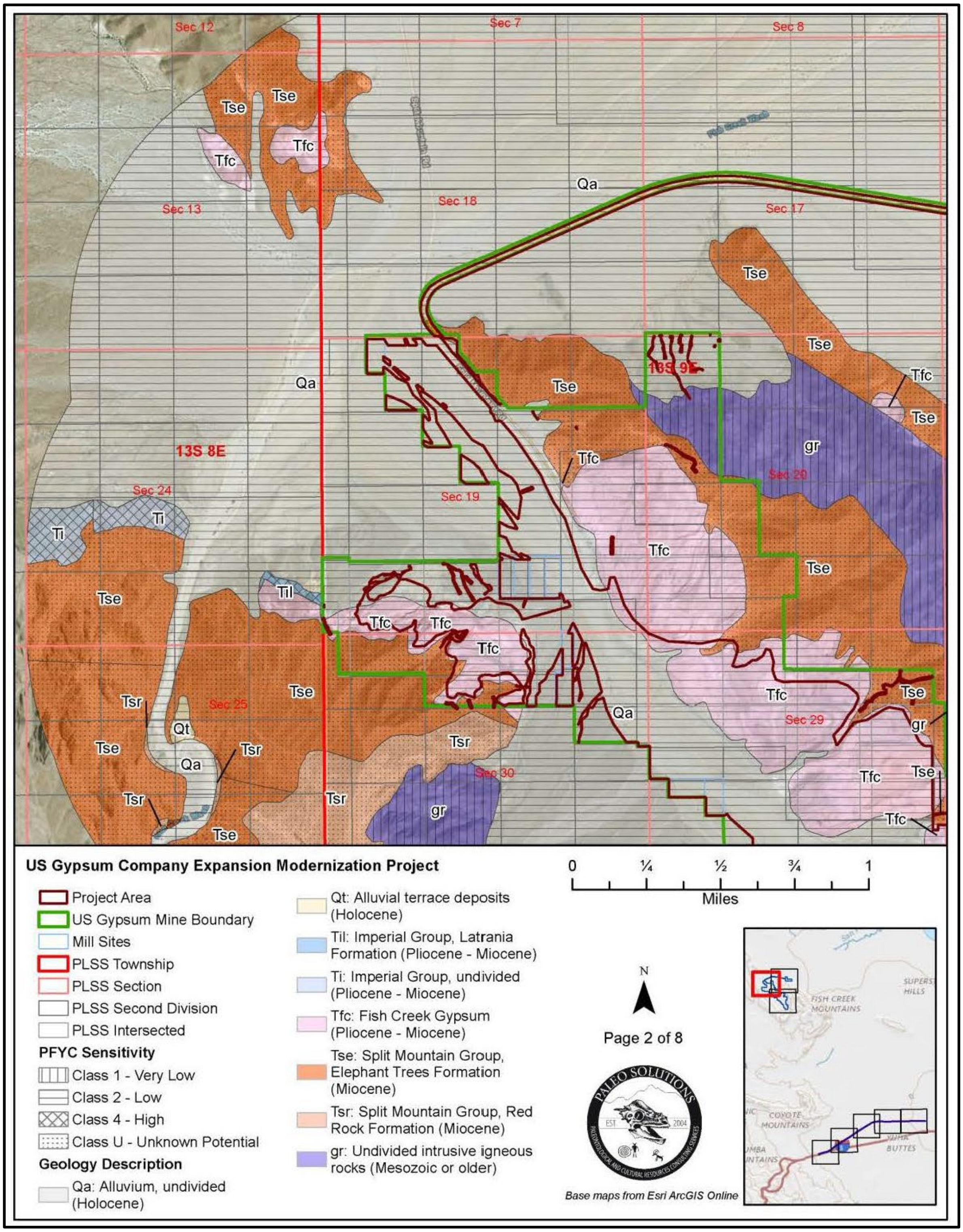

SOURCE: PaleoSolutions 2018; Figure A-2
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.4-1b
Geologic Map with Paleontological Sensitivity

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CEQA Appendix G Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to geology and soils if it would:

a) directly or indirectly cause potential substantial adverse effects, involving the risk of loss, injury, or death involving;
  - rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of known fault (Refer to Division of Mines and Geology Special Publication 42),
  - strong seismic ground shaking,
  - seismic-related ground failure, including liquefaction, or
  - landslides;

b) result in substantial soil erosion or the loss of topsoil;

c) be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;

d) be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to the life or property;

e) have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater; or

f) directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

As discussed in Section 4.4.4.1, "2008 EIR/EIS Impacts Analysis," below, under "Significance Determination," the Initial Study (Appendix A-1) determined that the project would not result in any potentially significant impacts for checklist items a through e for both the project site and the off-site mitigation sites. Therefore, these topics are not evaluated further in this SEIR.

4.4.3.2 Analysis Methodology

The 2008 EIR/EIS concluded that Quarry expansion and development of Well No. 3 would have no potential to encounter or destroy paleontological resources. However, the proposed water pipeline alignment was not evaluated for the presence of paleontological resources at that time. A Paleontological Technical Study prepared by Paleo Solutions dated May 15, 2018, updated the previous work with current data reviews, and included more areas including the pipeline alignment. The report is included as Appendix F to this SEIR and is summarized herein.

Because the report was prepared to support the SEIS, it was prepared according to BLM standards using the BLM system for rating the potential for presence of paleontological resources. As described previously, the BLM system assigns geologic units a Potential Fossil Yield Classification (PFYC) class based on the probability and abundance of fossils ranging from very low (PFYC 1) to very high (PFYC 5). Typically, paleontological resource compliance is required for earthwork occurring within PFYC classes 3, 4, 5, or U rock units. The BLM identified that portions of the project area are underlain by geologic formations assigned to a class of PFYC 3, 4, and U.

4.4.4 Project Impacts and Mitigation Measures

4.4.4.1 2008 EIR/EIS Impact Analysis

The 2008 EIR/EIS concluded that the expanded Quarry would not be subject to substantial risk of deep-seated landslides, rockfalls, or surficial instability based on the characteristics of the gypsum deposit, which is nearly pure, with no weak clay or silt intercalations observed in natural or mined exposures. However, the 2008 EIR/EIS did indicate that reclaimed slopes could be subject to significant slope instability due to the proximity of the Coyote Creek branch of the San Jacinto fault and the relatively long period of exposure expected for reclaimed quarry slopes. To ensure long-term slope stability within the Quarry, the following mitigation measures were included:

> ***Mitigation Measure 3.2-1a****: Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet.*
>
> ***Mitigation Measure 3.2-1b****: Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.*
>
> ***Mitigation Measure 3.2-1c****: Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.*

The 2008 EIR/IES did not identify any potentially significant geologic, soil, or seismic impacts that would result from development of proposed Well No. 3 and associated pipeline.

The 2008 EIR/EIS also determined that impacts to paleontological resources from the USG Expansion/Modernization Project would be less than significant and no mitigation was required. This determination was supported by the fact that the formations with higher likelihood of the presence of fossils are located below the formation that is being mined at the Quarry. Thus, proposed activities would not extend into fossil-bearing formations.

4.4.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) based on an updated paleontological technical study and provided the following additional mitigation measure to address potential impacts to paleontological resources at the site of proposed Well No. 3 and along the associated pipeline alignment.

> ***Mitigation Measure 3.2-3:*** *Once the pipeline alignment is located and staked, a pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the area associated with the Proposed Action. For any areas where potential resources cannot be avoided by the pipeline construction, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) should be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.*

4.4.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to geology, soils, or paleontological resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

The primary change in circumstance related to geology, soils, and paleontological resources was that the Paleontological Resources Preservation Act (PRPA) was signed into law on March 30, 2009 (Public Law 111-11, Title VI, Subtitle D; 16 U.S.C. §§ 470aaa—470aaa11). The PRPA provides: 1) uniform definitions for “paleontological resources” and “casual collecting”; 2) uniform minimum requirements for paleontological resource use permit issuance; 3) uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands; and 4) uniform requirements for curation of federal fossils in approved repositories.

New Information

There is no new information related to the potential for unstable geologic or soils conditions to occur at the Quarry. The Quarry is inspected and monitored annually in accordance with Imperial County and Division of Mine Reclamation requirements. Slopes are evaluated for gross and surficial stability under both static and seismic conditions. In addition to conducting quantitative analyses, the slopes are visually evaluated by a qualified geologist for erosion, over-excavation, and signs of adverse geologic conditions. The annual inspection reports were reviewed as part of the 2019 SEIS. No change in conditions that could alter the findings of the 2008 EIR/EIS were noted.

As described previously, a Paleontological Technical Study (Appendix F) was completed as part of the 2019 SEIS (Paleo Solutions, Inc. 2018) which identifies geologic formations underlying the Quarry, well site, and associated pipeline alignment which have high potential for containing paleontological resources. Based on the results of the Paleontological Technical Study, the 2019 SEIS recommended implementation of Mitigation Measure 3.2-3 to address potential impacts to paleontological resources at Well No. 3 and the associated pipeline alignment.

Significance Determination

The Initial Study prepared for the project (Appendix A-1) determined that with respect to the Quarry expansion and development of Well No. 3 and associated pipeline, each of the geology, soils, and seismic impacts (checklist questions [a] through [e]) would be below the applicable significance thresholds and that no additional analysis of this portion of the proposed project is required. This was based on the finding that the proposed project would not result in a new significant geology or soils impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

As preservation of the Old Kane Springs Road site and restoration of the Viking Ranch site are newly proposed actions, the Initial Study (Appendix A-1) provided further evaluation of the potential geologic, seismic, and soils impacts (checklist questions [a] through [e]) at these sites and determined each to be below the applicable significance threshold. This was based on the fact that no ground disturbing activities are proposed at the Old Kane Springs Road site and proposed activities at the Viking Ranch site would be limited to grading, would be subject to existing regulations ensuring worker safety and minimizing soil erosion, and would not expose anyone to geologic or seismic hazards as no development is proposed. These issues are not evaluated further in this SEIR.

Regarding paleontological resources (checklist question [f]), new information available in the 2019 SEIS indicates the potential for paleontological resources to be encountered at the Well No. 3 site and along the associated pipeline alignment. In addition, potential disturbance of paleontological resources at the Viking Ranch site has not previously been evaluated. No ground disturbing activities are proposed at the Old Kane Springs Road Preservation Site and there would be no potential to destroy paleontological resources or unique geologic features at that site.

Based on project revisions, changed circumstances, and new information that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS pertaining to paleontological resources. This evaluation is provided in the following impact analysis.

4.4.4.4 Subsequent Environmental Analysis

Impact 4.4-1: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geological Feature

According to the 2008 EIR/EIS, the geologic units at the Quarry are not expected to contain significant paleontological resources due to their nature and origin. Paleontological surveys were recommended in the areas of the proposed Well No. 3 and associated pipeline alignment, but these surveys were not performed prior to certification of the 2008 EIR/EIS.

The Paleontological Technical Study (Paleo Solutions 2018; Appendix F) prepared for the 2019 SEIS determined that the Quarry, well site, and proposed pipeline alignment are mostly underlain by geologic units with very low or low paleontological potential (PFYC classes 1 and 2). Areas of high paleontological potential (PFYC classes 3 and 4) lie within a mile of the west and southwest portions of the Quarry boundary. However, project ground disturbing activities at the Quarry operation would only be associated with the mining of gypsum and would not extend into the boulder conglomeration formation. Therefore, the proposed project would not be expected to affect any significant paleontological resources within the Quarry.

One segment of the proposed pipeline alignment intersects with mapped higher-potential deposits. Excavations, grading, and other earthmoving activities can result in significant adverse effects to paleontological resources in geologic units determined to have a moderate to high potential for fossil yield. Consistent with the recommendations of the 2018 technical study, Mitigation Measure 4.4-1 would minimize this potential impact by requiring completion of pre-construction paleontological surveys, by requiring preparation of a plan for monitoring and worker training, and in the event of a discovery, for the implementation of recovery, analysis, curation, and notification protocols.

The Viking Ranch Restoration Site has not been evaluated for paleontological resources sensitivity. The site has been subject to extensive ground disturbance through its use as an orchard resulting in a low potential for presence of significant undiscovered paleontological resources. Regardless, implementation of Mitigation Measure 4.4-1 requiring a pre-construction paleontological survey and resource management plan would reduce this potential impact to a less than significant level.

No ground disturbing activities are proposed at the Old Kane Springs Road Preservation Site and there would be no potential to destroy paleontological resources at that site.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following newly proposed mitigation measure:*

Mitigation Measure 4.4-1: *Pre-construction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.*

Level of Significance After Mitigation: Less than significant.

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SECTION 4.5: GREENHOUSE GAS EMISSIONS

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SECTION 4.5:
GREENHOUSE GAS EMISSIONS

This section of the subsequent environmental impact report (SEIR) documents potential impacts associated with greenhouse gas (GHG) emissions and plans for reducing GHG emissions that would occur as a result of the project.

The information in this section is based primarily on the *Air Quality Modeling Analysis US Gypsum Company—Southwest Plant* (Trinity Consultants 1999) (see Appendix C-1, “Air Quality Modeling Analysis”), the analysis provided in the 2019 SEIS, and other publicly available sources related to air quality.

4.5.1 Environmental Setting

This section discusses GHGs and climate change issues to provide a context for the analysis of project impacts associated with GHG emissions. It also provides a discussion of the actions and phenomena that contribute to climate change and puts into context global, national, and state emissions of GHGs. The term “climate change” is often used interchangeably with the term “global warming;” however, “climate change” is the preferred term because it helps convey that there are other changes in addition to rising temperatures (NAS 2005).

4.5.1.1 Climate Change Background

The Greenhouse Effect and Greenhouse Gases

GHGs trap heat in the atmosphere. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), are associated with certain industrial products and processes. The major GHGs emitted by human activities remain in the atmosphere for periods ranging from decades to centuries; therefore, it is expected that atmospheric concentrations of GHGs will continue to rise over the next few decades (EPA 2020d).

Human activity has been increasing the concentration of GHGs in the atmosphere (mostly carbon dioxide from combustion of coal, oil, and gas, and a few other trace gases). Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

A warming trend from anthropogenic emissions, or human activity, from the pre-industrial period to the present is predicted to persist for centuries to millennia and continue to cause further long-term changes in the climate system, such as sea level rise, with associated impacts. Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°C. These differences include increases in mean temperature in most land and ocean regions, hot extremes in most inhabited regions, heavy precipitation in several regions, and the probability of drought and precipitation deficits in some regions (IPCC 2018).

The effect each GHG has on climate change is measured as a combination of the volume or mass of its emissions, plus the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of "carbon dioxide equivalent" (CO_2e).

Contributions to Greenhouse Gas Emissions

Global

Anthropogenic GHG emissions worldwide in 2010 totaled approximately 44,542 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) (CAIT 2014). The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP, such that $MMTCO_2e$ = (million) metric tons of a GHG) x (GWP of the GHG). For example, the GWP for methane is 21. This means that emissions of 1 million metric tons of methane are equivalent to emissions of 21 million metric tons of CO2. Six countries—China, the U.S., the Russian Federation, India, Japan, and Brazil—and the European Community accounted for approximately 66 percent of the total global emissions, approximately 28,943 $MMTCO_2e$ (CAIT 2014). Anthropogenic GHG emissions worldwide in 2011 totaled approximately 43,816 $MMTCO_2e$.

United States

In 2012, the United States produced 6,676 million metric tons (MMT) of CO_2 (EPA 2020b). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 81 percent of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93 percent of the CO_2 emissions. Since 1990, gross U.S. greenhouse gas emissions have increased by 3.7 percent. From year to year, emissions can rise and fall due to changes in the economy, the price of fuel, and other factors. In 2018, U.S. greenhouse gas emissions increased compared to 2017 levels. The increase in CO_2 emissions from fossil fuel combustion was a result of multiple factors, including increased energy use due to greater heating and cooling needs due to a colder winter and hotter summer in 2018 compared to 2017 (EPA 2020d).

State of California

According to the 2019 GHG inventory data compiled by California Air Resources Board (CARB) for the California Greenhouse Gas Inventory for 2000—2017, California emitted 424 $MMTCO_2e$ of GHGs, including emission resulting from out-of-state electrical generation (CARB 2019). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2017 are presented in Table 4.5-1, "GHG Sources in California."

Table 4.5-1
GHG Sources in California

Source	Percent of Total[1]
Agriculture	7.6%
Commercial Uses	3.6%
Electricity Generation	14.7%[2]
Industrial Uses	21.1%
Recycling and Waste	2.1%

Source	Percent of Total[1]
Residential Uses	6.1%
Transportation	40.1%
High GWP Substances	4.7%
Total[3]	**100%**

Source: CARB 2019
Notes:
1. Percentage of total has been rounded.
2. Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2e annually.
3. Totals may not sum due to rounding.

Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources though uncertain impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Estimated global warming from human activity is currently increasing at 0.2°C (likely between 0.1°C and 0.3°C) per decade due to past and ongoing emissions (IPCC 2018).

The 2014 *Safeguarding California: Reducing Climate Risk* report prepared by the California Natural Resources Agency (CNRA) identified anticipated impacts to California due to climate change through extensive modeling efforts. The Intergovernmental Panel on Climate Change's Working Group II Report, *Climate Change 2007: Impacts, Adaptation and Vulnerability*, also describes anticipated impacts on a global scale. Collectively, the two reports indicate general climate changes in California may include the following the following events:

- Increasing evaporation;
- Rearrangement of ecosystems as species and ecosystems shift northward and to higher elevations;
- Increased frequency, duration, and intensity of conditions conducive to air pollution formation (particularly ozone);
- Reduced precipitation, changes to precipitation and runoff patterns, reduced snowfall (precipitation occurring as rain instead of snow), earlier snowmelt, decreased snowpack, and increased agricultural demand for water;
- Increased experiences of heat waves;
- Increased growing season and increased growth rates of weeds, insect pests and pathogens;
- Inundation by sea level rise, and exacerbated shoreline erosion; and
- Increased incidents and severity of wildfire events and expansion of the range and increased frequency of pest outbreaks (CNRA 2014 and IPCC 2007).

The changes described above are based on the results of several models prepared under different climatic scenarios; therefore, discrepancies may occur between projections and interpretations.

4.5.2 Regulatory Setting

Climate change has recently become widely recognized as a threat to the global climate, economy, and population. As a result, the climate change regulatory setting—at the federal, state and local level—is complex and evolving. This section identifies key legislation, executive orders, and seminal court cases related to climate change that are germane to the project's GHG emissions.

4.5.2.1 Federal

In 2002, President George W. Bush set a national policy goal of reducing the GHG emission intensity (tons of GHG emissions per million dollars of gross domestic product) of the U.S. economy by 18% by 2012. The goal did not establish any binding reduction mandates. Rather, the United States Environmental Protection Agency (EPA) began to administer a variety of voluntary programs and partnerships with GHG emitters in which the EPA partners with industries that produce and utilize synthetic gases to reduce emissions of particularly potent GHGs.

The Bush Administration's approach to addressing climate change was challenged in *Massachusetts et al. v. Environmental Protection Agency*, 549 U.S. 497 (2007). In this decision, the U.S. Supreme Court held that the EPA was authorized by the Clean Air Act to regulate CO_2 emissions from new motor vehicles. The Court did not mandate that the EPA enact regulations to reduce GHG emissions but found that the only instances in which the EPA could avoid taking action were if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change.

On December 7, 2009, the EPA issued an endangerment finding under the Clean Air Act, concluding that GHGs threaten the public health and welfare of current and future generations and that motor vehicles contribute to greenhouse gas pollution. These findings provide the basis for adopting new national regulations to mandate GHG emission reductions under the federal Clean Air Act.

The following four sections summarize EPA's recent regulatory activities with respect to various types of GHG sources.

Stationary Sources

Mandatory Greenhouse Gas Reporting Rule

Congress passed the Consolidated Appropriations Act of 2008 (HR 2764) in December 2007, which includes provisions requiring the establishment of mandatory GHG reporting requirements. On September 22, 2009, EPA issued a final rule to require reporting of GHG emissions from all sectors of the United States economy. Fossil fuel and industrial GHG suppliers, motor vehicle and engine manufacturers, and facilities that emit 25,000 metric tons or more of CO_2e per year are required to report GHG emissions data to EPA annually. The first annual reports for the largest emitting facilities, covering calendar year 2010, were submitted to EPA in 2011. This program covers approximately 85 percent of the nation's GHG emissions and applies to roughly 10,000 facilities. USEPA's reporting system provides a better understanding of GHG sources and will guide development of the best possible policies and programs to reduce emissions. The data also allows the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective methods to reduce emissions in the future.

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

The Clean Air Act established the Prevention of Significant Deterioration (PSD) and Title V programs, which apply to stationary sources that emit certain levels of regulated air pollutants (generally those pollutants for which USEPA has established ambient air quality standards and their precursors or has established emission standards). The PSD applicability thresholds are up to 250 tons per year (tpy) of an attainment pollutant, while the Title V applicability thresholds are up to 100 tpy of a regulated air pollutant. On June 3, 2010, EPA published a final rule that tailors the applicability criteria that determine whether stationary sources and modification projects become subject to permitting requirements for GHG emissions under the PSD and Title V programs of the Clean Air Act (tailoring rule). Under the tailoring rule, only the largest sources of GHGs (i.e., those responsible for 70 percent of the GHG pollution from stationary sources) would be subject to these GHG permitting requirements.

In 2014, the U.S. Supreme Court issued its decision in *Utility Air Regulatory Group v. EPA* (No. 12-1146), finding that the U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a permit pursuant to the “Clean Air Act’s Prevention of Significant Deterioration” or “Title V” operating permit programs. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT). The U.S. EPA’s Greenhouse Gas Reporting Program requires facilities that emit 25,000 $MTCO_{2e}$. or more of GHG to report their GHG emissions to the U.S. EPA to inform future policy decisionmakers (EPA 2020f).

Mobile Sources

EPA and NHTSA Joint Rulemaking for Vehicle Standards

In response to the Massachusetts v. EPA U.S. Supreme Court ruling discussed above, the Bush Administration issued an Executive Order on May 14, 2007, directing the EPA, the Department of Transportation (DOT), and the Department of Energy (DOE) to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. EISA reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy Standards, the Renewable Fuel Standard (RFS), and the appliance/lighting efficiency standards. The law includes an increased Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020. EPA (2020e). On March 31, 2020, the National Highway and Traffic Safety Administration (NHTSA) and EPA finalized CAFE and carbon dioxide emissions standards for model years 2021-2026 (NHSTA 2020).

On June 30, 2009, the EPA granted a waiver for California for its greenhouse gas emission standards for motor vehicles. In August 2016, the USEPA and the NHTSA adopted Phase 2 of the Heavy-Duty Vehicle National Program. Phase 2 aims to set performance-based standards that would be met through wider deployment of existing and advanced technologies. For diesel engines, the proposed standards began for model year 2018 engines and phased in through 2027. Phase 2 is expected to reduce GHG emissions by an additional 10 percent.

However, EPA withdrew the waiver on September 19, 2019, and announced "The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." NHTSA also proposed regulatory text implementing its statutory authority to set nationally applicable fuel economy standards that made explicit that California’s programs would also be preempted under NHTSA’s authorities. The SAFE Vehicles Rule sets fuel economy and carbon dioxide standards that increase 1.5% in stringency each year from model years 2021 through 2026. These standards apply to both passenger cars and light trucks (NHSTA 2020). However, California and twenty-three other states and the Cities of Los Angeles and New York have challenged the legality of the SAFE program in federal court.

Additional GHG Rules and Policies

In addition to the rules and regulations developed with respect to stationary and mobile sources, discussed above, other federal developments have aimed to reduce GHGs from other sources, including land use activities.

Energy Independence and Security Act

On December 19, 2007, President Bush signed the Energy Independence and Security Act of 2007 (EISA). Among other key measures, the Act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory RFS requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by Model Year 2020; directs National Highway Traffic Safety Administration to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
3. Prescribe or revise standards affecting regional efficiency for heating and cooling products, procedures for new or amended standards, energy conservation, energy efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Partnership for Sustainable Communities

On June 16, 2009, the DOT, US Department of Housing and Urban Development, and USEPA announced the creation of the Partnership for Sustainable Communities (Partnership). The Partnership was formed to help improve access to affordable housing and transportation choices, and to lower transportation costs while protecting the environment. In order to achieve these goals, the Partnership agencies have and will continue to incorporate the following six livability principles into federal funding programs, policies and legislative proposals:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate and leverage federal policies and investment.
- Value communities and neighborhoods.

Since 2009, the Partnership awarded more than $4 billion in grants to support livability investments, provided recommendations for the sustainable siting of federal facilities, and participated in various forums to encourage sustainable housing and transportation strategies. Going forward, the Partnership plans to continue to work with existing grantees to encourage economic growth and implementation of livability principles and leverage off of these efforts to provide additional communities with lessons learned from these experiences, as well as improving the federal government's ability to provide additional communities with more streamlined access to Partnership programs (EPA 2014).

CEQ NEPA Guidelines on GHGs

On June 26, 2019, the Council on Environmental Quality (CEQ) published draft guidance on how National Environmental Policy Act (NEPA) analysis and documentation should address greenhouse gas (GHG) emissions and climate change. It recommends agencies attempt to quantify a proposed action’s projected direct and reasonably foreseeable indirect GHG emissions when the amount of those emissions is substantial enough to warrant quantification, and when it is practicable to quantify them using available data and GHG quantification tools. When an agency determines that the tools, methods, or data inputs necessary to quantify a proposed action’s GHG emissions are not reasonably available, or it otherwise would not be practicable, the agency should include a qualitative analysis and explain its basis for determining that quantification is not warranted.

The draft guidance provides reporting tools and instructions on how to assess the effects of climate change. The draft guidance does not apply to land and resource management actions, nor does it propose to regulate greenhouse gases. The CEQ extended the comment period on the draft guidance, which was scheduled to close on July 26, 2019, for 31 days until August 26, 2019. Although CEQ has not yet issued final guidance, various NEPA documents are beginning to incorporate the approach recommended in the draft guidance (CEQ 2019).

4.5.2.2 State

California has adopted various administrative initiatives and enacted legislation relating to climate change, much of which sets aggressive goals for GHG emissions reductions within the state. However, none of this legislation provides definitive direction regarding the treatment of climate change in environmental review documents prepared under CEQA. In particular, the amendments to the CEQA Guidelines do not require or suggest specific methodologies for performing an assessment or thresholds of significance, and do not specify greenhouse gas reduction mitigation measures. Instead, the CEQA amendments continue to rely on lead agencies to choose methodologies and make significant determinations based on substantial evidence, as discussed in further detail below. Consequently, no State agency has promulgated binding regulations for analyzing GHG emissions, determining their significance, or mitigating any significant effects in CEQA documents.

The discussion below provides a brief overview of CARB and Office of Planning and Research (OPR) documents and of the primary legislation that relates to climate change that may affect the emissions associated with the proposed project. It begins with an overview of the primary regulatory acts that have driven GHG regulation in California, which underlie many of the GHG rules and regulations that have been developed.

Executive Order S-3-05 (Statewide GHG Targets)

California Executive Order S-03-05 (June 1, 2005) mandates a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. Although the 2020 target is the core of AB 32, and has effectively been incorporated into AB 32, the 2050 target remains the goal of the Executive Order only.

Assembly Bill 32 and Senate Bill 32 (Statewide GHG Reductions)

The California Global Warming Solutions Act of 2006, Assembly Bill (AB) 32, was signed into law in September 2006 after considerable study and expert testimony before the Legislature. The law instructs CARB to develop and enforce regulations for the reporting and verifying of statewide GHG emissions. The Act directed CARB to set a GHG emission limit of approximately 28.5% below "business-as-usual" predictions of year 2020 GHG emissions, based on 1990 levels, to be achieved by December 31, 2020. The bill set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner and required CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions. SB 32 and Executive Order B-30-15 requires the state to reduce emissions by 40 percent below 1990 levels by 2030.

On December 11, 2008, CARB adopted the initial Scoping Plan to achieve the goals of AB 32. The Scoping Plan established an overall framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emission level would require a reduction of GHG emissions of approximately 29% below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business as usual"). The 2008 Scoping Plan evaluated opportunities for sector-specific reductions, integrated all CARB and Climate Action Team early actions and additional GHG reduction measures by both entities, identified additional measures to be pursued as regulations, and outlined the role of a cap-and-trade program. In a report prepared on September 23, 2010, CARB indicated 40 percent of the reduction measures identified in the Scoping Plan had been secured. Although the cap-and-trade program began on January 1, 2012 (after CARB completed a series of activities dealing with the registration process, compliance cycle, and tracking system), covered entities did not have an emissions obligation until 2013.

In July 2011, CARB revised its "business as usual" GHG emission estimate for 2020, in order to account for the recent economic downturn in its emission projections. The estimate presented in the scoping plan (596 million metric tons CO_2e) was based on pre-recession, 2007 data from the Integrated Energy Policy Report. CARB also updated the projected "business as usual" 2020 GHG emissions to 545 million metric tonnes CO_2e at this time. The Scoping Plan was reapproved in August 2011 with the program's environmental documentation.

On February 10, 2014, CARB released the public draft of the "First Update to the Scoping Plan." "The First Update" built upon the 2008 Scoping Plan with new strategies and recommendations and identified opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. "The First Update" defined CARB's climate change priorities over the next five years and set the groundwork to reach post-2020 goals set forth in Executive Orders S-3-05 and B-16-12. It also highlighted California's progress toward meeting the 2020 GHG emission reduction goals defined in the 2008 Scoping Plan. "The First Update" evaluated how to align the State's long-term GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. "The First Update" to the Scoping Plan was approved by the Board on May 22, 2014 (CARB 2020).

The second update to the scoping plan, the *2017 Climate Change Scoping Plan* update (CARB 2017), was adopted by CARB in December 2017. The primary objective for the *2017 Climate Change Scoping Plan* is to identify the measures required to achieve the mid-term GHG reduction target for 2030 (i.e., reduce emissions by 40 percent below 1990 levels by 2030) established under Executive Order B-30-15 and SB 32. The 2017 Climate Change Scoping Plan identifies an increased need for coordination among State, Regional, and local governments to realize the potential for GHG emissions reductions that can be gained from local land use decisions. It notes that emissions reductions targets set by more than one hundred local jurisdictions in the State could result in emissions reductions of up to 45 $MMTCO_2e$ and 83 $MMTCO_2e$ by 2020 and 2050, respectively. To achieve these goals, the 2017 Scoping Plan Update includes a recommended plan-level efficiency threshold of six metric tons or less per capita by 2030 and no more than two metric tons by 2050. The major elements of the 2017 Climate Change Scoping Plan framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero emission vehicle (ZEV) buses and trucks;
- Low Carbon Fuel Standard (LCFS), with an increased stringency (18 percent by 2030);
- Implementation of SB 350, which expands the Renewable Portfolio Standard (RPS) to 50 percent and doubles energy efficiency savings by 2030;
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks;
- Implementing the proposed Short-Lived Climate Pollutant Strategy, which focuses on reducing CH_4 (methane) and hydrocarbon emissions by 40 percent and anthropogenic black carbon emissions by 50 percent by year 2030;
- Continued implementation of SB 375;
- Post-2020 Cap-and-Trade Program that includes declining caps;
- 20 percent reduction in GHG emissions from refineries by 2030; and
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink (CARB 2017).

Energy Conservation Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24, of the California Code of Regulations [CCR], known as "Title 24") were established in 1978 in response to a legislative mandate to reduce California's energy consumption. Since that time, Title 24 has undergone several revisions. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards, referred to as "CALGreen." The California Green Building Standards Code (Title 24, proposed Part 11) was adopted as part of the California Building Standards Code (24 CCR). Part 11 which adopts certain mandatory standards for residential and nonresidential development and imposes a number of requirements on California buildings, including those with respect to planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor environmental quality. The California Green Building Standards Code also contains a variety of voluntary measures, which local governments can choose to require, and which would enable buildings to qualify for special recognition. In part, the purpose of the California Green Building Code is to reduce greenhouse gas emissions from buildings.

CALGreen contains both mandatory and voluntary measures. For non-residential land uses there are 39 mandatory measures including, but not limited to exterior light pollution reduction, wastewater reduction by 20 percent, and commissioning (i.e., bringing into operation and ensuring quality) of projects over 10,000 square feet. Two tiers of voluntary measures apply to non-residential land uses, for a total of 36 additional elective measures.

California's Building Energy Efficiency Standards are updated on an approximately three-year cycle. The 2019 standards, which were adopted May 9, 2018, and went into effect on January 1, 2020, improve upon existing standards, focusing on three key areas: proposing new requirements for installation of solar photovoltaics for newly constructed low-rise residential buildings; updating current ventilation and Indoor Air Quality (IAQ) requirements; and extending Title 24 Part 6 to apply to healthcare facilities. The 2019 standards also propose several smaller improvements in energy efficiency, such as lighting controls and improvements for water heating systems.

Mobile Sources

Senate Bill 375 (Sustainable Communities and Climate Protection Act)

In January 2009, California SB 375, known as the Sustainable Communities and Climate Protection Act, went into effect. SB 375 provides for a new planning process to coordinate land use planning, regional transportation plans, and funding priorities in order to help California meet the GHG reduction goals established in AB 32. SB 375 includes provisions for streamlined CEQA review for some infill projects such as transit-oriented development. SB 375 also requires Metropolitan Planning Organizations (MPOs) relevant to the project area (including the Association of Bay Area Governments [ABAG]) to incorporate a "sustainable communities strategy" (SCS) in their regional transportation plans (RTPs) that will achieve GHG emission reduction targets set by CARB. The applicable SCS for the project area is called Plan Bay Area 2040 (see Section 4.5.2.4, "Local").

The SCS is a growth strategy in combination with transportation policies that will show how the MPO will meet its GHG reduction target. If the SCS cannot meet the reduction goal, an Alternative Planning Strategy may be adopted that meets the goal through alternative development, infrastructure, and transportation measures or policies.

In August 2010, CARB released the proposed GHG reduction targets for the MPOs to be adopted in September 2010. The proposed reduction targets for the Bay Area region were seven percent by the year 2020 and 15 percent by the year 2035. On February 15, 2011, CARB's Executive Officer approved the final targets. CARB filed a Notice of Decision two days later on February 17, 2011.

SB 375 also required CARB to appoint a Regional Targets Advisory Committee (RTAC) by January 31, 2009, to recommend factors for CARB to consider and methodologies for it to use in setting GHG emission reduction targets for each region. The RTAC must include representation from the League of California Cities, the California State Association of Counties,

MPOs, developers, planning organizations, and other stakeholders. In January 2009, CARB appointed 21 members to the RTAC, from a variety of constituencies. On September 29, 2009, the RTAC released its recommendations to CARB, representing a key step in the establishment of regional targets for inclusion in sustainable community strategies. The RTAC recommendations focus largely on the manner in which CARB staff should interact with various stakeholders during the target-setting process, and how staff should use empirical studies and modeling in establishing regional GHG targets.

Senate Bill 743

Traditionally, transportation impacts have been evaluated pursuant to CEQA by examining whether the project is likely to cause automobile delay at intersections and congestion on nearby individual highway segments, and whether this delay will exceed a certain amount (this is known as Level of Service or LOS analysis). SB 743, which was signed into law in 2013, initiated an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts, with the goal of better measuring the actual transportation-related environmental impacts, including greenhouse gas emissions, of any given project.

According to the Legislature: "New methodologies under the California Environmental Quality Act [were] needed for evaluating transportation impacts that are better able to promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of a multimodal transportation system, and providing clean, efficient access to destinations."

Starting on July 1, 2020, agencies analyzing the transportation impacts of new projects must look at a metric known as vehicle miles traveled (VMT) instead of LOS. VMT measures how much actual auto travel (additional miles driven) a proposed project would create on California roads. If the project adds excessive car travel onto roads, the project may cause a significant transportation impact.

Agencies have used VMT as a concept and metric for some time. Prior to SB 743, VMT was already being used in CEQA to study other potential impacts such as greenhouse gas, air quality, and energy impacts.

Assembly Bill 1493 (Mobile Source Reductions)

AB 1493 required CARB to adopt regulations by January 1, 2005, to reduce GHG emissions from noncommercial passenger vehicles and light-duty trucks of model year 2009 and after. The bill required the California Climate Action Registry (CCAR) to develop and adopt protocols for the reporting and certification of GHG emissions reductions from mobile sources for use by CARB in granting emission reduction credits. The bill authorized CARB to grant emission reduction credits for reductions of GHG emissions prior to the date of the enforcement of regulations, using model year 2000 as the baseline for reduction.

In 2004, CARB applied to the EPA for a waiver under the Federal Clean Air Act to authorize implementation of these regulations. The waiver request was formally denied by the EPA in December 2007. In January 2008, the State Attorney General filed a lawsuit against the EPA challenging the denial of California's request for a waiver to regulate and limit GHG emissions from these vehicles. In January 2009, President Barack Obama issued a directive to the EPA to reconsider California's request for a waiver, which the EPA granted on June 30, 2009, as discussed further below. As part of this waiver, the EPA specified that CARB may not hold a manufacturer liable or responsible for any noncompliance caused by emission debits generated by the manufacturer for the 2009 model year. The waiver was later withdrawn on September 19, 2019, under the "SAFE Vehicles Rule Part One: One National Program," discussed above. As noted above, the withdrawal of the waiver and implementation of SAFE are currently undergoing suit by California and several other states and cities.

Low Carbon Fuel Standard (LCFS)

Executive Order S-01-07 (January 18, 2007) requires a 10% or greater reduction (from current transportation fuels) in the average fuel carbon intensity for CARB-regulated transportation fuels in California. CARB identifies the Low Carbon Fuel Standard as a Discrete Early Action item under AB 32, and the final resolution (09 31) was issued on April 23, 2009. CARB is currently in the process of updating its Carbon Intensity Lookup Tables to add new pathways to calculate emissions from fuel sources.

CEQA Guidelines

Senate Bill 97 (CEQA Guidelines)

SB 97 required OPR to prepare amended CEQA Guidelines for submission to the CNRA regarding GHG analysis and feasible mitigation of the effects of GHG emissions as required by CEQA. The CNRA was required to certify and adopt these revisions to the State CEQA Guidelines by January 1, 2010. These amendments became effective as of March 18, 2010. The adoption of SB 97 and subsequent CEQA amendments are widely recognized as confirmation that lead agencies are required to include an analysis of climate change impacts in CEQA documents.

CEQA Amendments

Pursuant to SB 97, OPR developed proposed amendments to the CEQA Guidelines (CEQA Amendments) for the feasible mitigation of GHG emissions and their effects, which it first submitted to the Secretary of the CNRA on April 13, 2009. After a public review and comment period, on December 30, 2009, the CNRA adopted the CEQA Amendments, which became effective on March 18, 2010.

The CEQA Amendments for Greenhouse Gas Emissions state in Section 15064.4(a) that lead agencies should “make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate” GHG emissions. The CEQA Amendments note that an agency may identify emissions by either selecting a “model or methodology” to quantify the emissions or by relying on “qualitative analysis or other performance-based standards.” Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

- The extent a project may increase or reduce GHG emissions as compared to the environmental setting.
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

In addition, Section 15064.7(c) of the CEQA Amendments specifies that “[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence.” Similarly, the revision to CEQA Appendix G, “Environmental Checklist Form,” which is often used as a basis for lead agencies' selection of significance thresholds, does not prescribe specific thresholds. Rather, Appendix G asks whether the project would conflict with a plan, policy or regulation adopted to reduce GHG emissions; or generate GHG emissions that would significantly affect the environment, indicating that the determination of what is a significant effect on the environment should be left to the lead agency.

Accordingly, the CEQA Amendments do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Amendments emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA.

The CEQA Amendments indicate that lead agencies should consider all feasible means, supported by substantial evidence and subject to monitoring and reporting, of mitigating the significant effects of GHG emissions. As pertinent to the project, these potential mitigation measures, set forth in Section 15126.4(c), may include (1) measures in an existing plan or mitigation program for the reduction of GHG emissions that are required as part of the lead agency's decision; (2) reductions in GHG emissions resulting from a project through implementation of project design features; (3) off-site measures, including offsets, to mitigate a project's emissions; and (4) carbon sequestration measures.

Among other things, the CNRA noted in its Public Notice for these changes that impacts of GHG emissions should focus on the cumulative impact on climate change. The Public Notice states:

> While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CNRA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project's incremental contribution of greenhouse gas emissions is cumulatively considerable.

Thus, the CEQA Amendments continue to make clear that the significance of greenhouse gas emissions is most appropriately considered on a cumulative level.

Other State GHG Activities

Executive Order S-13-08

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08 instructing California agencies to assess and prepare for the impacts of rising sea level associated with climate change. Rising sea levels could have devastating effects on California's infrastructure, such as threatening the state's water supply, highways, and airports. Pursuant to S-13-08, by June 30, 2009, the CNRA must have assessed California's vulnerability to climate change impacts and outlined solutions to climate change problems. The CNRA released the 2009 Climate Adaptation Strategy on August 3, 2009. The report summarizes the latest science on how climate change could impact the state and provides recommendations on how to manage against those threats in seven sector areas. The report is to be reviewed every two years.

Executive Order S-13-08 also required the CNRA to request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report by December 1, 2010. In October 2010, the Sea-Level Rise Task Force of the Coastal and Ocean Working Group of the California Action Team released the State of California Sea-Level Rise Interim Guidance Document. The final report from the National Academy of Sciences, *Sea-Level Rise for the Coasts of California, Oregon, and Washington*, was released in June 2012. The final report was updated in 2013, and again in 2017 in response to Governor Brown's Executive Order B-30-15, establishing a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. The current 2017 version of the report is published under the name *Rising Seas in California: An Update on Sea-Level Rise Science.* The updated guidance incorporates new information presented in the NAS Report to reflect recent advances in ice loss science and projections of sea-level rise.

Renewable Power Requirements

A major component of California's Renewable Energy Program is the Renewable Portfolio Standard (RPS) established under SBs 1078 (Sher), 107 (Simitian), and 2X (Simitian). Under the RPS, certain retail sellers of electricity are required to increase the amount of renewable energy each year by at least one percent until they reach twenty percent by December 31, 2010, with a final goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from the project because electricity production from renewable sources is generally considered "carbon neutral." For the purposes of this analysis, it is assumed that the production of electricity from these renewable sources does not produce any net emissions of CO_2.

Vehicle Emissions Standards/Improved Fuel Economy

AB 1493 (Pavley) and the Low Carbon Fuel Standard (LCFS) is a clean-car standard that reduces GHG emissions from new passenger vehicles (light duty auto–medium duty vehicle [LDAMDV]) from 2009 through 2016 and is anticipated to reduce GHG emissions from passenger vehicles by 30% in 2016. The LCFS requires a reduction of 2.5% in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10% by 2020.

For on-road vehicle CO_2 emissions, California Emissions Estimator Model (CalEEMod) applies AB 1493 and LCFS reductions to the appropriate vehicle classes for scenario years 2011 and after, based on CARB's EMFAC model and associated post processors.

4.5.2.3 Regional

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the regional planning agency for Imperial, Los Angeles, Orange, Riverside, San Pernadino, and Ventura counties, and serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG serves as the federally designated metropolitan planning organization (MPO) for the Southern California region and is the largest MPO in the U.S. SCAG prepared the 2020 Regional Transportation Plan/Sustainable Communities Strategy (2020 RTP/SCS), which includes policies, strategies, and projects for advancing the region's mobility, economy, and sustainability through 2040. The RTP serves as a long-range transportation plan that is developed and updated by SCAG every four years, providing a vision for the development of transportation facilities throughout the region based on growth forecasts and economic trends over a 20-year period. The SCS expands upon transportation strategies in the RTP to analyze growth patterns.

and establish future land use strategies that aid the region in meeting its GHG reduction targets. The SCS does not mandate future land use policies for local jurisdictions, but rather provides a foundation of regional policy upon which local governments can build. On September 3, 2020, SCAG's Regional Council unanimously voted to approve and fully adopt Connect SoCal (2020–2045 Regional Transportation Plan/Sustainable Communities Strategy), and the addendum to the Connect SoCal Program Environmental Impact Report. Connect SoCal is a long-range visioning plan that builds upon and expands land use and transportation strategies established over several planning cycles to increase mobility options and achieve a more sustainable growth pattern. It charts a path toward a more mobile, sustainable and prosperous region by making connections between transportation networks, between planning strategies and between the people whose collaboration can improve the quality of life for Southern Californians. Connect SoCal outlines more than $638 billion in transportation system investments through 2045. It was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino and Ventura.

4.5.2.4 Local

Imperial County

Imperial County Regional Climate Action Plan

The Imperial County Regional Climate Action Plan identifies GHG reduction strategies and measures that would be implemented on a regional level as well as jurisdiction-specific measures that are intended to reduce local GHG emissions in unincorporated Imperial County as well as each of the incorporated cities within the County.

Imperial County Air Pollution Control District

The Imperial County Air Pollution Control District (ICAPCD) is the regulatory agency responsible for air quality in the Imperial Valley region. ICAPCD regulates emission sources and ensures regional compliance with State and federal regulations. ICAPCD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. ICAPCD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. The ICAPCD has not established formal quantitative or qualitative GHG emissions thresholds through a public rulemaking process. However, the ICAPCD has adopted the federal Prevention of Significant Deterioration (PSD) and Title V GHG air permitting requirements by reference for stationary sources in Regulation IX in Rules 900 and 903, which are described below.

ICAPCD Rule 900

ICAPCD Rule 900 provides procedures for issuing permits to operate for industrial projects that are subject to Title V of the federal Clean Air Act Amendments of 1990 (Major Sources) of emissions, which is defined as a source that exceeds 100 tons per year of any regulated pollutant, including GHG emissions.

ICAPCD Rule 903

ICAPCD Rule 903 applies to any stationary source that would have the potential to emit hazardous air pollutants (HAPs). Rule 903 provides a de minimis emissions level of 20,000 tons of CO_{2e} per year, where if a stationary source produces less emissions than the de minimis emissions levels, the source is exempt from the Rule 903 recordkeeping and reporting requirements.

Imperial County Regional Active Transportation Plan

The Imperial County Regional Active Transportation Plan incorporates existing plans and studies, including the Imperial County Safe Routes to School Regional Master Plan and Imperial County Bicycle Master Plan, into a comprehensive regional active transportation plan. The Active Transportation Plan includes six goals aimed at improving active transportation (i.e., walking and bicycling) improvements throughout the unincorporated County (Imperial County 2018). These goals are: (1) Improved Access,

(2) Network Connectivity, (3) Safety, (4) Increase Active Transportation Travel Within Each Community, (5) Health, and (6) Equity.

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan Conservation Element* pertain to air quality and the proposed project:

Conservation and Open Space Element

Goal 7: The County shall actively seek to improve the quality of air in the region.

Objective 7.1: Ensure that all projects and facilities comply with current Federal, state, and local requirements for attainment of air quality objectives.

Objective 7.2: Develop management strategies to mitigate fugitive dust. Cooperate with all Federal, State and local agencies in the effort to attain air quality objectives.

Objective 7.4: Enforce and monitor environmental mitigation measures relating to air quality.

San Diego County

San Diego County Climate Action Plan

On September 30, 2020, the County of San Diego Board of Supervisors voted to set aside its approval of the County's 2018 Climate Action Plan (2018 CAP) and related actions because the Final SEIR (2018 CAP SEIR) was found to be out of compliance with CEQA. In response to this Board action, staff are currently preparing a CAP Update to revise the 2018 CAP and correct the items identified by the court within the Final 2018 CAP SEIR that were not compliant.

The overall objective of the CAP Update is to reduce GHG emissions generated from activities within the unincorporated county and GHG emissions generated by County facilities and operational activities throughout the county, including facilities and operations located within incorporated cities, to meet or exceed GHG reduction goals under State laws.

The CAP Update may consider strategies and reduction measures, and supporting efforts organized under the same five categories as the 2018 CAP:

- Built Environment &Transportation
- Energy
- Solid Waste
- Water and Waste Water
- Agriculture and Conservation

Pending adoption of a new CAP, the County will continue to implement the 26 GHG reduction measures and sustainability initiatives/programs identified in the 2018 CAP to reduce GHG emissions as part of its ongoing commitment to the environment and to meet the State's 2030 reduction target.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to air quality and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-14: Sustainable Land Development. Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs through minimized transportation and energy demands, while protecting public health and contributing to a more sustainable environment.

Policy COS-14.8: Minimize Air Pollution. Minimize land use conflicts that expose people to significant amounts of air pollutants.

Policy COS-14.9: Significant Producers of Air Pollutants. Require projects that generate potentially significant levels of air pollutants and/or GHGs such as quarries, landfill operations, or large land development projects to incorporate renewable energy, and the best available control technologies and practices into the project design.

Policy COS-14.10: Low-Emission Construction Vehicles and Equipment. Require County contractors and encourage other developers to use low-emission construction vehicles and equipment to improve air quality and reduce GHG emissions.

Policy COS-14.11: Native Vegetation. Require development to minimize the vegetation management of native vegetation while ensuring sufficient clearing is provided for fire control.

Goal COS-15: Sustainable Architecture and Buildings. Building design and construction techniques that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment.

Policy COS-15.6: Design and Construction Methods. Require development design and construction methods to minimize impacts to air quality.

San Diego County Air Pollution Control District

The San Diego County APCD (SDAPCD) is responsible for regulating stationary sources of air emissions in the San Diego Air Basin (SDAB). The SDAPCD Rules and Regulations establish emission limitations and control requirements for stationary sources, based on their source type and magnitude. The SDAPCD and the San Diego Association of Governments are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County RAQS was initially adopted in 1991 and is periodically updated to reflect updated information on air quality, emission trends, and new feasible control measures. The most recent update was adopted in March 2023 (SDAPCD 2023).

The RAQS includes all feasible control measures that can be implemented for the reduction of O_3 precursor emissions. To be consistent with the RAQS, a project must conform to emission growth factors outlined in the plan. Control measures for stationary sources proposed in the RAQS and adopted by the SDAPCD are incorporated into the SDAPCD Rules and Regulations. SDAPCD has also developed the air basin's input to the SIP. The SIP includes the SDAPCD's plans and control measures for attaining the O_3 NAAQS. The SIP is also updated on a triennial basis. SDAPCD developed its 2020 Eight-Hour Ozone Attainment Plan for San Diego County, which provides plans for attaining and maintaining the 8-hour NAAQS for O_3 (San Diego County APCD 2020). A Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard was adopted by the SDAPCD in 2012 but has not yet been approved by the USEPA (SDAPCD 2012). The SDAB is designated attainment or unclassified for the remaining criteria air pollutants.

4.5.3 Analysis Methodology and Significance Criteria

The following sections discuss the methods for evaluating project emissions of greenhouse gases.

4.5.3.1 Significance Criteria

CEQA Guidelines Appendix G

Appendix G of the CEQA Guidelines identifies the following impact issues in Greenhouse Gas Emissions tables of the Appendix G Environmental Checklist, asking whether the project would:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Imperial County GHG Thresholds of Significance

ICAPCD does not have established quantitative or qualitative GHG emissions thresholds through a public rulemaking process. However, the ICAPCD has adopted the federal Prevention of Significant Deterioration (PSD) and Title V GHG air permitting requirements by reference for stationary sources in Regulation IX in Rules 900 and 903, as described in Section 4.5.2.4, above. Rule 903 provides a de minimis emissions level of 20,000 tons of CO_2e per year for stationary sources. In the absence of a formally adopted emissions threshold for land development projects, this de minimis emissions level is used as a provisional threshold for projects in Imperial County.

San Diego County GHG Thresholds of Significance

In response to AB 32, the California Air Pollution Control Officers Association (CAPCOA) white paper titled "CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act," provides a current methodology used for jurisdictions across the state to identify a screening level for GHG emissions (CAPCOA 2008). The CAPCOA guidance states that projects should be screened to determine if their associated GHG emissions exceed 900 MT CO_2e.

Because the County has not developed its own numeric GHG significance threshold, it utilizes the interim screening threshold of 900 MT CO_{2e} per year in accordance with the CAPCOA white paper. The screening level does not indicate impact significance; rather, it is intended to be used to screen out smaller projects that do not generate substantial amounts of GHG emissions and allows regulatory and discretionary actions to focus on the more significant sources of GHG emissions. If a project exceeds this threshold, a climate change analysis would need to be completed to analyze any potential project specific impacts. The CAPCOA white paper suggests that projects that emit less than 900 MT CO_2e per year would not likely be considered cumulatively considerable and would not interfere with the ability of the state to achieve its GHG reduction targets.

4.5.3.2 Methodology

Quarry, Well No. 3, and Associated Pipeline

The GHG emissions analysis for the Quarry expansion project is based on a comparison of the emissions estimated in the 2008 EIR/EIS and those estimated in the 2019 SEIS. Construction and operation emissions were assessed in accordance with EPA and ICAPCD air quality regulations using CARB's Off-Road Emissions Model, CARB Off-Road Diesel Tier Emission Factors, and Off-Road and On-Road Mobile Source Emissions' Factors (EMFAC per SCAQMD website).

Viking Ranch Restoration Site

The GHG emissions related to restoration of the Viking Ranch site were calculated using the CalEEMod Version 2022.1.1.4 using the project details, including construction equipment, provided in Chapter 2, "Project Description." The CalEEMod printouts for the Viking Ranch site are provided as Appendix C-3, "Estimated Air Quality Emissions—Viking Ranch."

Old Kane Springs Road Preservation Site

GHG emissions were not calculated for the Old Kane Springs Road Preservation Site as no construction activities will be carried out and operational emissions would be limited to occasional maintenance activities and would be negligible.

4.5.4 Project Impacts and Mitigation Measures

4.5.4.1 2008 EIR/EIS Impact Analysis

The 2006 Draft EIR/EIS did not evaluate Greenhouse Gas (GHG) Emissions because this was not yet identified as a topic that requires evaluation in Appendix G, Environmental Checklist Form, of the CEQA Guidelines. However, the 2008 Final EIR/EIS provided an analysis of GHG emissions in response to public comments on the 2006 Draft EIR/EIS. The 2008 Final EIR/EIS notes that USG has taken specific actions to track, report and certify GHG emissions. In November 2006, USG voluntarily joined the California Climate Action Registry (CCAR), a group of distinguished public and private sector organizations taking demonstrated leadership on climate change. USG was the first building materials manufacturer to participate in this program. As a member, USG has worked with the CCAR to develop an annual GHG emission tracking, reporting and certification protocol, that USG is applying to all of its facilities, including the Project. In particular, USG is certifying its GHG emissions data for the facility with the CCAR.

The Plant and Quarry, as well as associated activities, have used a variety of fuels over time for mobile sources, powering the Plant and for Quarry operations. Under the CCAR emission reporting regime, direct emissions of GHG are generated at the USG Expansion/Modernization Project from sources that are owned or controlled by USG, and include stationary combustion (e.g., plant burner and emergency generators) and mobile combustion sources (e.g., company owned off-road equipment and vehicles). Additionally, the USG

Expansion/Modernization Project accounts for indirect GHG emissions, which are generated by sources owned or controlled by other entities. These indirect sources are primarily from fossil fuel combustion at third party power plants. GHG emissions are typically measured in terms of pounds or tons of "carbon dioxide equivalent" (CO_2e). The following estimates of GHG emissions were provided:

Maximum *direct* GHG emissions CO_2e associated with the USG Expansion/Modernization Project in comparison with the baseline year of 1998 are as follows: During the 1998 baseline, the facility generated approximately 72,200 tons of CO_2e per year. The proposed action will result in about 110,000 tons of CO_2e per year, which represents an increase of approximately 37,800 tons of CO_2e per year, from business as usual.

Maximum *indirect* GHG emissions CO_2e associated with the USG Expansion/Modernization Project from the baseline year of 1998 are as follows: During the 1998 baseline, the facility generated approximately 14,000 tons of CO_2e per year. The Proposed action will generate approximately 23,700 tons of CO_2e per year, which represents an increase of approximately 9,700 tons of CO_2e per year, from business as usual.

The 2008 Final EIR/EIS notes that while USG Expansion/Modernization Project may emit up to a maximum of approximately 47,500 tons of additional (above baseline) CO_2e emissions per year (assuming business as usual) from both direct and indirect sources, the USEPA estimates 2005 national CO_2e emissions of 7,260.4 teragrams (i.e., million metric tons). Thus, the project's CO_2e emission increases represent less than 0.00000654 percent of the national CO_2e loading, and an even smaller percentage of the worldwide CO_2e loading. Consequently, the 2008 Final EIR/EIS concludes that it is not anticipated that the individual effect of the project's GHG emissions on the environment will be significant.

With regard to the USG Expansion/Modernization Project's cumulative contribution to GHG emissions, the 2008 Final EIR/EIS acknowledges that the project may emit up to a maximum approximately 47,500 tons additional CO_2e emission per year above baseline for both direct and indirect sources, but states that this increase could be below reasonably anticipated thresholds of significance (though none existed at the time of the 2008 EIR/EIS), even when considered cumulatively. Further, since the demand for wallboard remains strong, it is stated that no project alternative would lead to more wallboard production outside of California, perhaps in other states or countries with little or no emission controls when compared to California's requirements. Since California is globally acknowledged as having among the most stringent energy efficiency and emission control requirements, wallboard production outside California would generate more GHG emissions. Additionally, transportation of the products into California (whether by truck, rail, or ship) would produce even more GHG emissions from the burning of fuel associated with product transportation. On this point, USG has determined that "transportation of gypsum board accounts for over 10 percent of the embodied energy," associated with the product. Thus, the no project alternative would have greater environmental impacts than the emissions from the project.

Despite the limited potential impacts due to increased GHG emissions identified in the 2008 Final EIR/EIS, the following mitigation measure was identified to substantially lessen the potential for the project to result in cumulative impacts on climate change:

> ***Mitigation Measure 1:*** *USG has already acquired approximately $1.6 million in emission credits for the Project to meet applicable air quality standards. Similarly, to the extent necessary, USG will*

> *acquire recognized carbon credits to offset the project's increased GHG emissions.*

The air quality section of the 2008 EIR/EIS also provided the following mitigation measures to limit exhaust emissions from mobile equipment at the Quarry. These measures would also reduce emission of GHGs during project implementation:

> ***Mitigation Measure 3.6-1a:*** *USG shall ensure all equipment is maintained and tuned according to manufacturer's specifications.*
>
> ***Mitigation Measure 3.6-1b:*** *USG shall schedule production activities to minimize daily equipment operations and idling trucks.*
>
> ***Mitigation Measure 3.6-1c:*** *USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.*

4.5.4.2 2019 SEIS Impact Analysis

In accordance with the Council on Environmental Quality's (CEQ) NEPA-implementing regulations in place at the time of its preparation, the 2019 SEIS did not evaluate greenhouse gas emissions or climate change and no additional mitigation measures were provided.

4.5.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to GHG emissions. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

GHG emissions must now be discussed under current CEQA Guidelines. With regard to ICAPCD requirements, in 2011, ICAPCD amended Rule 903 to add GHGs to the list of regulated pollutants. Rule 903 applies to any stationary source that would have the potential to emit air contaminants equal to or in excess of the threshold for a major source of regulated air pollutants. As part of the revised rule, stationary sources that exceed the de minimis emissions level of 20,000 tons of CO_2e per year in a 12-month period would need to meet recordkeeping and reporting requirements.

New Information

No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. Furthermore, the effect of GHG emissions is not new information under CEQA Guidelines Section 15162(a)(3) that was not known and could not have been known during the prior environmental evaluations (see e.g., *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, 196 Cal.App.4th 515, 524 (2011).

4.5.4.4 Subsequent Environmental Analysis

Impact 4.5-1: Greenhouse Gas Emissions Generated by Project Activities Could Have a Significant Impact on Global Climate Change

Quarry, Well No. 3, and Associated Pipeline

ICAPCD does not have established quantitative or qualitative GHG emissions thresholds through a public rulemaking process. However, the ICAPCD has adopted the federal Prevention of Significant Deterioration (PSD) and Title V GHG air permitting requirements by reference for stationary sources in Regulation IX in Rules 900 and 903, as described in Section 4.5.2.4, above. Rule 903 provides a de minimis emissions level of 20,000 tons of CO_2e per year for stationary sources. In the absence of a formally adopted emissions thresholds for land development projects, this de minimis emissions level is used as a provisional threshold for projects in Imperial County.

Quarry operations and construction of proposed Well No. 3 and the associated pipeline would result in the emission of GHGs associated primarily with heavy equipment operation. The 2019 SEIS included updated emissions estimates for the proposed project, including Quarry operations and construction of Well No. 3 and the associated pipeline. These emissions estimates are summarized in Table 4.5-2, “Proposed Project Estimated GHG Emissions,” and are provided in detail in Appendix C-2, “SEIS Air Emissions Estimates.” As shown, Quarry operations and pipeline construction emissions would not exceed ICAPCD’s de minimis threshold for GHG emissions.

Table 4.5-2
Proposed Project Estimated GHG Emissions

Emissions Source	Total Annual CO_2e Emissions ($MTCO_2e$)[1]
Quarry Operations (Mobile Equipment)	8,312.5
Pipeline Construction (Mobile Equipment)	127.2
Total Annual CO_2e Emissions	8,439.7
ICAPCD Threshold	20,000
Exceed Threshold?	No

Source: BLM 2019 (Appendix N)
Notes:
1. Metric tons of CO_2 equivalent

It should be noted that pipeline construction emissions would be temporary with construction activities limited to one year, after which time total project GHG emissions would be reduced. Project emissions are further reduced through implementation of 2008 EIR/EIS Mitigation Measure 1 which requires USG to acquire recognized carbon credits to offset the project’s increased GHG emissions. For these reasons, the project would not significantly contribute to global climate change and this impact would be less than significant.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.5.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.6-1a*
  - *Mitigation Measure 3.6-1b*
  - *Mitigation Measure 3.6-1c*
  - *Mitigation Measure 1*

Level of Significance After Mitigation: Less than significant.

Viking Ranch Restoration Site

Because San Diego County has not developed its own numeric GHG significance threshold, it utilizes an interim screening threshold of 900 MT CO_2e per year based on the CAPCOA white paper (see Section 4.5.4.2, above).

The proposed restoration of the Viking Ranch site would result in temporary GHG emissions associated primarily with construction equipment operation. Emissions were estimated using the CalEEMod Version 2022.1.1.4 (see Appendix C-3) at an annual maximum of 880 MT CO_2e. Thus, the estimated annual project emissions would not exceed SDAPCD's screening thresholds of 900 MT CO2e. This indicates that restoration of the Viking Ranch site would not generate a substantial amount of GHG emissions, and this impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

No construction or development is proposed on the Old Kane Springs site. Operational GHG emissions, associated with occasional maintenance vehicle trips, would be negligible and are not evaluated further here.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.5-2: Consistency with Applicable GHG Plans, Policies, or Regulations

Quarry, Well No. 3, and Associated Pipeline

As demonstrated in this section, the proposed project would not exceed Imperial County's established significance threshold for GHG emissions. Implementation of mitigation measures from the 2006 Draft EIR/EIS (Mitigation Measures 3.6-1a through 3.6-1c) and 2008 Final EIR/EIS (Mitigation Measure 1) would further reduce or offset project GHG emissions. As demonstrated in Section 4.1, "Air Quality," the project would be consistent with the applicable air quality plans as well as the Imperial County General Plan and would not exceed development or population growth projections for the region. Thus, the project would be consistent with applicable GHG plans, policies, and regulations.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Offsite Mitigation Sites

San Diego County does not currently have an adopted climate action plan. However, GHG emissions at the offsite mitigation sites would be limited to temporary construction emissions at the Viking Ranch site. As demonstrated in this section, these construction emissions would not exceed the applicable San Diego County significance threshold. Upon completion of restoration activities, operational emissions at both the Viking Ranch and Old Kane Springs sites would be limited to occasional maintenance truck trips and would be negligible. The project would not result in any development, population growth, or a significant increase in vehicle miles traveled. Thus, the project would be consistent with applicable GHG plans, polices, and regulations.

Level of Significance: Less than significant.

Mitigation Measures: None required.

SECTION 4.6:
HYDROLOGY AND WATER QUALITY

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SECTION 4.6:
HYDROLOGY AND WATER QUALITY

This section of this subsequent environmental impact report (SEIR) addresses potential impacts of the project on hydrology and water quality, describes the environmental and regulatory setting, and discusses mitigation measures to reduce impacts where applicable. Issues addressed include impacts on surface and ground water quality, surface water drainage patterns, and groundwater supply.

The information in this section is based on the following hydrology studies which were previously prepared to support the 2008 EIR/EIS and 2019 SEIS, as well as the habitat mitigation and monitoring plan (HMMP) prepared for the offsite mitigation sites:

- *Jurisdictional Delineation for United State Gypsum Company Plaster City Expansion/Modernization Project* (Hernandez Environmental Services [HES] 2016) (Appendix D-2, “2016 Jurisdictional Delineation”)
- *Hydrologic and Water Quality Study for the U.S. Gypsum Company Supplemental Environmental Impact Study* (Dudek 2018) (Appendix G-1, “2018 Water Quality Study”)
- *Update on Groundwater Conditions Memorandum* (Todd Groundwater 2018) (Appendix G-2, “2018 Groundwater Conditions Memorandum”)

4.6.1 Environmental Setting

4.6.1.1 Regional Setting

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation (HES 2016).

4.6.1.2 Hydrology and Water Quality Conditions at the Time of the 2008 EIR/EIS

The hydrology and water quality setting for the project site as provided in the 2008 EIR/EIS is summarized in the following paragraphs.

The project site is located within the Ocotillo Valley Groundwater Basin which is located to the west of the southwestern corner of the Salton Sea. This area is also commonly referred to as the Borrego Valley. It is bounded on the southwest by the Vallecito and Fish Creek Mountains, on the west by the Peninsular Ranges, on the north by the Borrego badlands, and on the east by the Salton Sea.

According to the 2008 EIR/EIS, the primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. In an area approximately 10 miles northeast of the proposed well site, groundwater discharges from two springs near the confluence of San Felipe Creek and Fish Creek Wash. Prior to 1984, flow from these springs only occurred intermittently. Since 1984, however, flow from these two springs has occurred year-round.

Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 feet below ground surface (bgs) in the center of the basin and contains water with TDS levels report in the range of 8,000 ppm. The elevated TDS levels are most likely due to leaching of the saline evaporite deposits in the surficial sediments. An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 feet bgs at some locations and contains water with TDS levels reported in the range of 1,400 ppm. Groundwater from the lower aquifer is used for agricultural purposes. According to DWR (Bulletin 118-75), the Ocotillo Valley Groundwater Basin covers an area of about 410 square miles, with a storage capacity of 5,800,000-acre feet and a usable groundwater capacity of 1,900,000 AF.

Groundwater is reported to be discharging to the Salton Sea at rates of 2,200 acre-feet/year to 4,500 acre-feet/year. The rate of outflow from the Ocotillo Valley Groundwater Basin is greater than the rate of inflow, as evidenced by declining water levels in the lower aquifer. Water levels are decreasing at the rate of three feet per year. Approximately one-third to one-half of this decline is due to agricultural pumping and the balance is due to natural outflow. The naturally-occurring groundwater deficit is most likely due to long-term climatic changes and/or drainage of the lower aquifer due to the lowering of the hydrologic base level caused by the disappearance of ancient Lake Cahuilla.

Water quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring are due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. The elevated water table intersects the surface at the location of the springs. From 1983 through 1996, irrigation rates have ranged from approximately 9,250-acre feet/year to over 12,000-acre feet/year, based on reported groundwater production.

Stream gauge data along San Felipe Creek show that, beginning in 1984, the base flow averaged several cubic feet per second (cfs). Seasonal peak flow generally occurs in late summer or early fall and may reach 50 cfs. If it is assumed that the base flow averages two cfs, then the minimum annual discharge of San Felipe Creek Spring is approximately 1,500-acre feet/year. The actual discharge is likely to be appreciably greater due to seasonal peak flows (Imperial County 2008).

4.6.1.3 Hydrology and Water Quality Conditions at Present

Quarry, Well No. 3, and Associated Pipeline

The following discussion is based primarily on the 2018 Water Quality Study prepared by Dudek (Appendix G-1) and the 2018 Groundwater Conditions Memorandum prepared by Todd Groundwater (Appendix G-2).

Surface Water

The project site falls within a 6,734-acre drainage area (Quarry watershed) in the greater Ocotillo Lower Felipe hydrologic area (HA) located within the Anza-Borrego hydrologic unit (HU) in the Colorado River Basin (Calwater 2.2.1, 2004, cited in Dudek 2018). All existing and proposed components of the project comprise approximately 1,100 acres.

Figure 4.6-1, "Hydrologic Setting," shows the location of the proposed project with reference to the Ocotillo Lower Felipe HA. The 1,100-acre-project site represents approximately 0.34 percent of the 322,686-acre Ocotillo Lower Felipe hydrologic area.

The region is characterized by low average annual rainfall (~4.5 inches), high rates of evapotranspiration, and steep rocky terrain sloping to lower-gradient alluvial filled basins. The hydrology of the region is dominated by the brief but high intensity rainfall events that typically occur during the bi-modal winter or summer rainy seasons. The majority of these rainfall events do not produce runoff, but those with sufficient rainfall intensity can, and often result in channel forming flash floods with high scouring energy and sediment loads. Within the steeper slopes of the Quarry watershed, concentrated runoff is collected within single well-defined channels, many of which are deeply incised. Upon reaching the alluvial basin of the Quarry watershed, coarse sediment loads are deposited with loss of streamflow energy, sometimes clogging channels and directing flow into prior channels (relic channels) or creating new channels. This dynamic has led to the development of a system of braided channels within the alluvial basin of the Quarry watershed, most effectively described as a series of compound channels, where a single dominate low-flow channel meanders through a network of relic channels and terraces, often susceptible to channel relocation during moderate to high discharge events (ACOE 2008, cited in Dudek 2018).

Surface flow generated from the Quarry watershed joins Fish Creek Wash just upstream where Split Mountain Road crosses Fish Creek Wash, at the apex of the Fish Creek Alluvial Fan. Similar to when the flows in the steeper Quarry watershed terrain reach the alluvial valley, surface flows that reach the Fish Creek Alluvial Fan apex lose energy and drop heavier sediment loads, often redirecting flows and forming numerous channels across the valley floor. As a typical alluvial fan, flow can be distributed across multiple channels during a single flow event (ACOE 2008, cited in Dudek 2018). Surface flows are typically lost to shallow infiltration in the soils adjacent to the active channels (and along floodplains) which are then lost to the high evaporative demands of the region. A smaller percentage of the discharge is lost to infiltration through the channel (transmission), which ultimately becomes groundwater recharge. Groundwater recharge is typically highest near the fan apex (Houston 2002, cited in Dudek 2018), where the coarser material is deposited. If surface flows are sufficient enough to overcome the losses within the alluvial fan (infiltration, soil tension, evaporation and evapotranspiration), they ultimately coalesce approximately 11 miles downstream near the confluence with San Felipe Creek.

San Felipe Creek resembles a more defined single-thread channel (ACOE 2008, cited in Dudek 2018) which drains to the Salton Sea approximately 20 miles east of the confluence with Fish Creek Wash. Fish Creek Wash is an ephemeral drainage downstream from the Project, while San Felipe Creek gains intermittent surface flows approximately 11 miles downstream (northeast) from the Quarry. The perennial surface water in this section of the creek is fed by groundwater discharge, not from the infrequent flows generated in Fish Creek. San Felipe Creek is natural habitat for the endemic *Cyprinodon macularius* (desert pupfish) (Black 1980, cited in Dudek 2018).

Existing Floodplain

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) identify flood zones and areas that are susceptible to 100-year and 500-year floods. Flood Zone A designates special flood hazard areas subject to inundation by the 1% (100-year) annual chance flood but for which no base flood elevations have been determined. The drainage located in the valley of the proposed project is located within a FEMA flood zone as depicted in Figure 4.6-2, "Existing Floodplain." Portions of the existing and proposed gypsum mining operations fall within the 100-year flood zone (FEMA 1984, cited in Dudek 2018).

Groundwater

A groundwater basin is defined by the California Department of Water Resources (DWR) as a hydrogeologic unit containing one large aquifer, or a series of stacked aquifers, with definitive lateral and horizontal boundaries (2003). California's Imperial Valley, and the area bordering the Salton Sea, are characterized by one large aquifer composed of numerous smaller interconnected groundwater basins and subbasins. The proposed project is located within the approximately 153,978-acre Borrego Valley Groundwater Basin (7-24), and specifically within the 90,086-acre Ocotillo Wells Sub-Basin (7-24.02), as defined by the California Department of Water Resources (DWR) Bulletin 118.

Two groundwater wells with depth to water information were identified near the project site. Well (12S08E22E001S) located approximately 7 miles north-northwest of the project site, provides groundwater depth data for the past 66 years. Current (2016) groundwater levels at this well indicate that the depth to groundwater is greater than 110 feet. Well 12S9E23D001S, located about 7.5 northeast of the project site, shows groundwater depths greater than 150 feet from 1980 to 2014.

Water Quality

303(d) Listed Water Bodies Fish Creek Wash and San Felipe Creek are not listed on California's Clean Water Act Section 303(d) list of Impaired Waters for any constituents. San Felipe Creek was evaluated for Selenium impairment, but the previous conclusion was reversed after analysis of three fish tissue samples taken from the creek determined that none exceeded the Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goal.

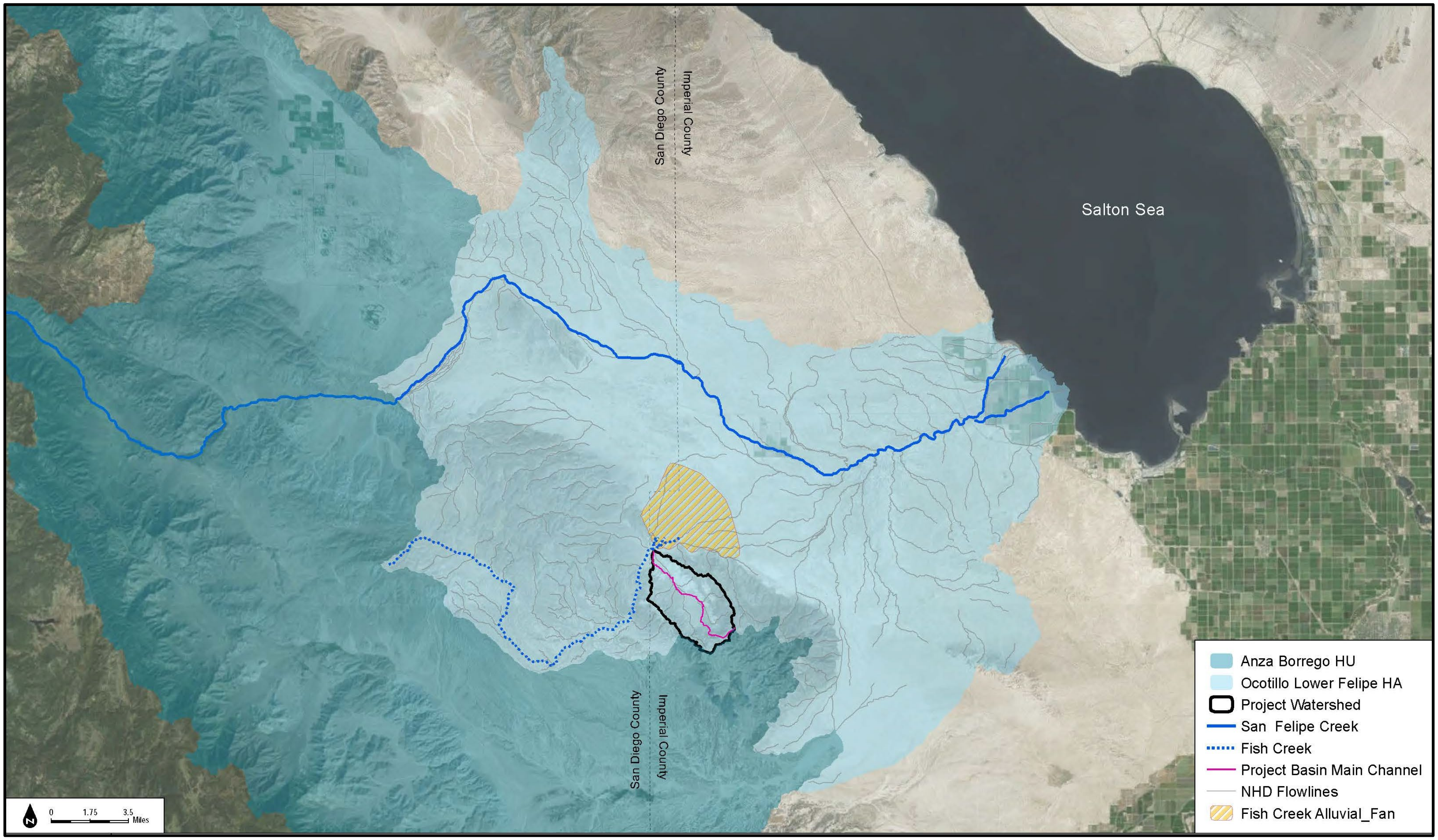
The Salton Sea is 303d listed for a number of contaminants that include arsenic, low dissolved oxygen (DO), nutrients, salinity, and toxicity. The Imperial Valley Drains are listed for sedimentation/siltation and selenium, in addition to a number of pesticides and herbicides. The 303d list indicates that selenium originates from the upper Colorado River basin, which does not include the San Felipe Creek drainage.

A Total Maximum Daily Load (TMDL) has been established for sedimentation/siltation in the Imperial Valley Drains, which reduced the current load of 11,000 tons per year of sediment to 4,600 tons per year. Sediment loads from Fish Creek Wash and San Felipe Creek do not reach the Imperial Valley Drains as San Felipe Creek discharges directly into the Salton Sea.

Groundwater quality for well 12S9E23D001S is generally characterized as sodium chlorite sulfate water. Total dissolved solids (TDS) concentrations range between 1,650 and 1,740 milligrams per liter (mg/L) (Dudek 2018).

Viking Ranch Restoration Site

The following discussion is based entirely on the HMMP prepared for the Viking Ranch site by Dudek (2021; Appendix D-4). A site reconnaissance of the Viking Ranch site was conducted on June 1, 2018, by Hugh McManus of Dudek. The site reconnaissance consisted of walking the site and viewing adjacent properties from the site. Photographs of the Viking Ranch site are included in Appendix C of Appendix D-4.



SOURCE: DUDEK 2018; Figure 2-1
NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.6-1
Hydrologic Setting

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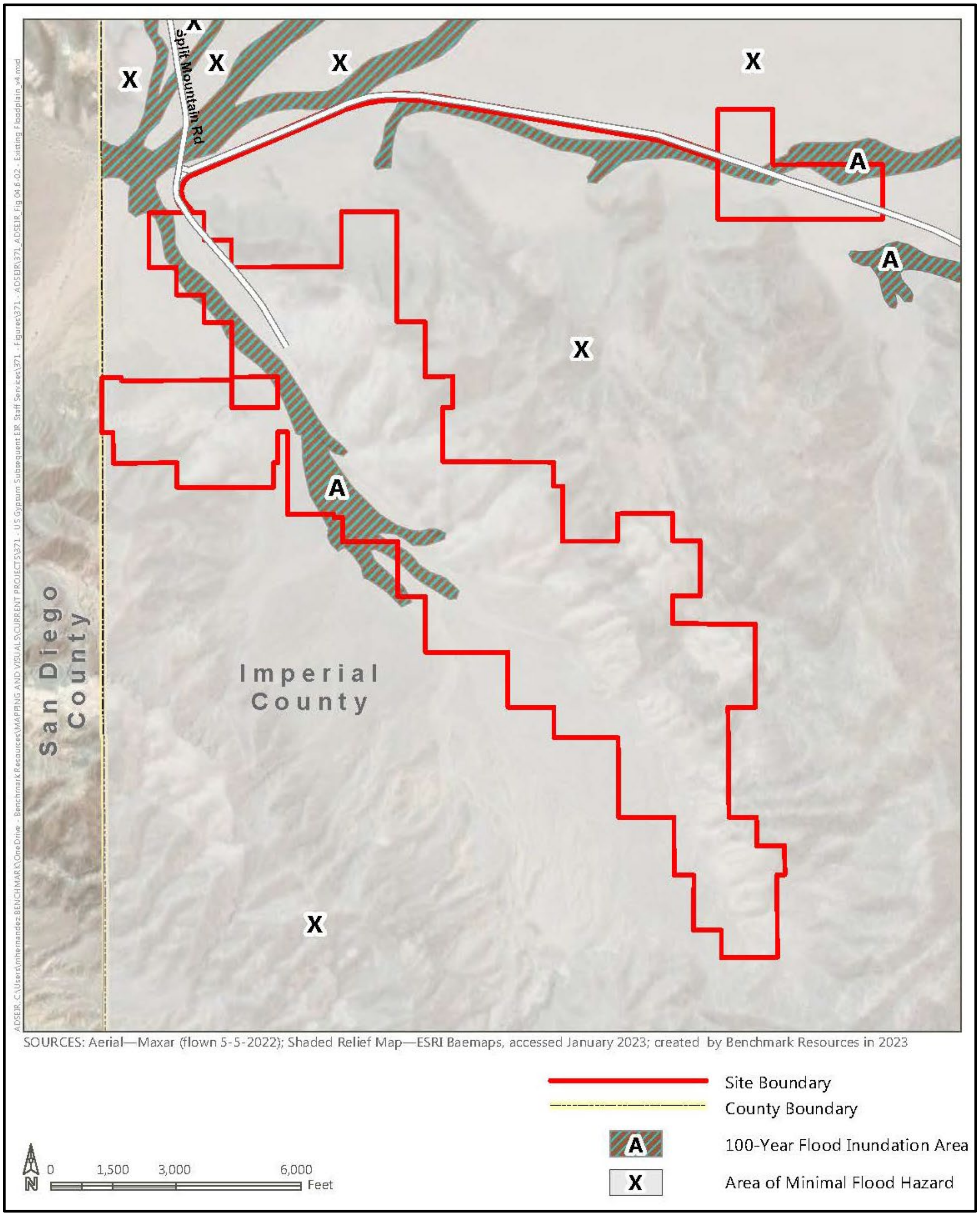

SOURCES: Aerial—Maxar (flown 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 4.6-2
Existing Floodplain

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Surface Water

According to Dudek, Coyote Creek splits just northwest of the Viking Ranch site and bisects both the southwestern and northeastern corners of the site. Berms, located along the entire north side of the site, appear to divert flood water from the north to the east and off the site. Surface water appeared to have flowed over areas of the site. Various water-cut channels and mud cracks were observed, likely due to runoff of water from high rainfall events (Dudek 2021).

Surface water was observed by Dudek staff flowing along the southern boundary of the site from the west to the east. The source of the surface water was not observed due to dense vegetation but was likely irrigation water from the adjacent property to the south. Surface water was flowing at roughly 0.25 cubic feet per second (cfs) and sustained flow for over 50 feet prior to infiltrating into the underlying sediments. Plant health and type near the surface water flow indicated that surface water regularly flows in that area. Surface water was not observed flowing off of the site (Dudek 2021).

According to Dudek, no unnatural pits, ponds, or lagoons were observed on site. Ponding of stormwater likely occurs in various low points on the site as observed by the presence of mud cracks. Incised channels, likely associated with Coyote Creek flooding, were observed throughout the site (Dudek 2021).

Traces of Coyote Creek currently bisect the property and, based on observations during the site reconnaissance performed by Dudek (2021), surface water occasionally flows southeast across the site during high rainfall events. According to Dudek (2021), historical aerial imagery and topographic maps show that Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the proposed Quarry expansion. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding Coyote and Indianhead mountains and which provides runoff to the surrounding watershed, and potentially from irrigation runoff from adjacent farmlands.

Agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. Based on a review of historical aerial imagery, the majority of water was diverted around the north end of the Viking Ranch site (Dudek 2021).

Floodplain

The floodplain on the Viking Ranch site is shown on Figure 2-4, “Old Kane Springs Road Preservation Site.” As a result of it is former use as an orchard, the Viking Ranch site is hydrologically disconnected from the Coyote Creek floodplain. The flow characteristics of the site have been substantially altered from natural conditions and windrows of coarse organic materials (from ground up orchard trees) and onsite topographic modifications impede water flows (Dudek 2021).

Groundwater

Based on sources searched by Environmental Data Resources (EDR), five water wells were mapped within 1 mile of the site. Water wells are located to the south of the site. The most recent water level measurement for the nearest well was recorded in 2008 and is approximately 336.34 feet below ground surface (bgs) (USGS 2018, cited in Dudek 2021). During the site reconnaissance, one additional water well was observed near the southwest corner of the site. The most recent water level measurements from the on-site well was recorded in 2008 and measured 340.10 feet bgs. The highest groundwater level measurement from the on-site well was recorded in 1998 and measured 250 feet bgs (USGS 2018, cited in Dudek 2021).

Old Kane Springs Preservation Site

According to Dudek (2021), historical aerial imagery and topographic maps show that the Old Kane Springs site receives water from direct precipitation that flows from the Vallecito Mountains into an unnamed stream that flows down to the valley floor. The stream meanders across the site creating braided channels through the unconfined basin area. The Old Kane Springs site is within the Borrego Springs Sub-basin (18100203), which lies within the same sub-basin as the Quarry expansion area.

According to Dudek (2021), USFWS NWI mapping shows riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately four miles east of the site. At this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers in unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.6.2 Regulatory Setting

4.6.2.1 Federal

Federal Water Pollution Control Act (33 USC 1251 et seq.)

The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), established the basic structure for regulating discharges of pollutants into the waters of the United States. This gave U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs such as setting water quality standards and criteria for contaminants in surface waters. The CWA does not deal directly with groundwater or with water quantity issues. Section 208 requires the use of best management practices (BMPs) to control releases of pollutants in stormwater at construction sites. Section 303(d) requires the states identify waters for which effluent limits are not stringent enough to implement the applicable water quality standards, and to prepare plans for improving the quality of these water bodies. Section 401 requires the federal government to obtain certification from the state that a project is consistent with state water quality standards. Section 402(p)(3)(B)(iii) authorizes the National Pollutant Discharge Elimination System (NPDES) permit program to control water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or human-made ditches. Section 404 authorizes the U.S. Army Corps of Engineers to regulate projects that will discharge dredge or fill materials into waters of the United States.

Construction projects and many industrial facilities must obtain NPDES permits to control the release of industrial chemicals in stormwater runoff. Stormwater discharges are generated by runoff from land and impervious areas such as paved streets, parking lots, and building rooftops during rainfall events that often contain pollutants in quantities that could adversely affect water quality. The primary method to control stormwater discharges is through the use of BMPs.

Anti-degradation Standards of the CWA dictate that once the existing uses of a water body have been established—by evaluating the water's quality relative to uses already attained—a State/Tribe must maintain the level of water quality that has been identified as being necessary to support those existing uses. The "use" of a water body is the most fundamental articulation of its role in the aquatic and human environments.

The "designated" uses of a water body are an expression of goals for the water, such as supporting aquatic life and human activities, including recreation and use as a public water supply. That is, these uses may not currently be attained for the water body. The general parameters of a State or Tribe's antidegradation program must address the following three categories:

- *Tier 1:* Protection of water quality for existing uses by maintaining the water quality necessary to support those uses. Tier 1 is applicable to all surface waters;
- *Tier 2:* Protection of high-quality waters, or water bodies where existing water quality conditions are better than necessary to protect CWA 101(a) designated uses. High quality waters must be addressed by the State or Tribe's antidegradation program because of the importance of such waters as a resource with economic, public health, and ecological value; and
- *Tier 3:* Outstanding National Resource Waters (ONRWs), or waters that have unique characteristics to be preserved (e.g., waters of exceptional recreational, environmental, or ecological significance). While States/Tribes are required to have provisions in their antidegradation policy that address ONRWs, it is left to the State/Tribe's discretion to identify waters as ONRWs.

At a minimum, States/Tribes must apply their antidegradation program to activities that are regulated under State, Tribal, or federal law, including:

- Any activity that requires a permit or water quality certification.
- Any activity subject to State/Tribal non-point source control requirements or regulations.
- Any activity that is otherwise subject to State/Tribal regulations specifying that water quality standards are applicable (EPA 2020).

4.6.2.2 State and Regional

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) [Section 13000 et seq.]) was enacted to establish a regulatory program to protect water quality and beneficial uses of all waters of the State of California. It created the State Water Resources Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) to plan, implement, manage, and enforce water quality protection and management. The RWQCBs are empowered by the Porter-Cologne Water Quality Control Act to require compliance with State and local water quality standards. The project site is located within the Colorado River Basin and is regulated by the Colorado River Basin RWQCB.

State Water Resources Control Board

The SWRCB administers regulations governed by the U.S. Environmental Protection Agency (USEPA) requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES). In turn, SWRCB's jurisdiction is administered through nine regional water quality control boards.

Statewide Construction General Permit

Dischargers whose projects disturb one or more acres of soil, or less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under SWRCB Order 2012-0006-DWQ (amending Order 2009-0009-DWQ as amended by 2010- 0014-DWQ), the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit). Construction activity subject to this permit also includes linear underground/overhead projects, such as the proposed pipeline, disturbing at least one acre. Construction and demolition activities subject to this permit include clearing, grading, grubbing, and excavation, or any other activity that results in a land disturbance equal to or greater than 1.0 acre.

Linear Utility Project (LUP) construction includes those activities necessary for installation of underground and overhead linear facilities (e.g., conduits; substructures; pipelines; towers and poles; cables and wires; connectors; switching, regulating, and transforming equipment; and associated ancillary facilities). As Order 2003-0007-DWQ previously regulated LUP construction activities, these projects are now regulated by Attachment A of Order 2012-0006-DWQ.

Permit applicants are required to submit a Notice of Intent (NOI) to the SWRCB and to prepare a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP identifies best management practices (BMPs) that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing sediment- and erosion-control measures and other measures to control potential chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases are completed at the site (postconstruction BMPs).

The Construction General Permit requires a risk-level assessment for construction sites, an active stormwater effluent monitoring and reporting program, rain event action plans, and numeric effluent limitations and numeric action levels for pH and turbidity.

Statewide Industrial General Permit

The SWRCB issued Water Quality Order 97-03-DWQ, NPDES General Permit No. CAS000001 WDRs for discharges of stormwater associated with industrial activities. This General Permit is intended to cover all new or existing stormwater discharges and authorized nonstormwater discharges from facilities required by federal regulations to obtain a permit, including those designated by the RWQCBs, facilities whose operators seek coverage under this General Permit, and facilities required by future USEPA stormwater regulations. Attachment 1 of the permit describes the types of facilities that are covered, summarized as follows:

- facilities that are subject to stormwater effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards (40 C.F.R. Subchapter N)
- manufacturing facilities,
- mining/oil and gas facilities,
- hazardous waste treatment, storage, or disposal facilities,
- landfills, land application sites, and open dumps that receive industrial waste,
- recycling facilities such as metal scrap yards, battery reclaimers, salvage yards, and automobile yards,
- steam electric-generating facilities,
- transportation facilities that conduct any type of vehicle maintenance such as fueling, cleaning, repairing, etc.,

- sewage treatment plants, and
- certain facilities (often referred to as "light industry") where industrial materials, equipment, or activities are exposed to stormwater.

Requirements of this permit include effluent limitations, receiving water limitations, SWPPP preparation, and stormwater monitoring programs. Facility operators must control pollutant discharges using the best available technology economically achievable and best conventional pollutant control technology. Discharges from facilities must not cause or contribute to a violation of an applicable water quality standard.

Colorado River Basin Regional Water Quality Control Board

As described previously, the project site and off-site mitigation sites are located within the Colorado River Basin and are under the jurisdiction of the Colorado River Basin Regional Water Quality Control Board.

Water Quality Control Plan for the Colorado River Basin

The Colorado River Basin RWQCB implements the Water Quality Control Plan for the Colorado River Basin (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240-13247). The Basin Plan provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Colorado River Basin. Specific criteria are provided for the larger, designated water bodies within the region, as well as general criteria or guidelines for surface waters and groundwaters. In general, the narrative criteria require that degradation of water quality does not occur due to increases in pollutant loads that will adversely affect the designated beneficial uses of a water body. Surface waters within the Ocotillo Lower Felipe Hydrologic Area (722.20) and groundwaters within the Anza-Borrego Hydrologic Unit (722.00) have been assigned multiple beneficial uses including wildlife habitat, freshwater habitat, recreation, agricultural supply, and groundwater recharge.

Senate Bill 610—Water Supply Assessment

Water Code Sections 10910 through 10915 were amended by Senate Bill 610 (SB 610) in 2002. SB 610 requires that under specific circumstances, as detailed below, an assessment of available water supplies must be conducted. The purpose of the assessment is to determine if available water supplies are sufficient to serve the demand generated by the project, as well as the reasonably foreseeable demand in the region over the next 20 years under average normal year, single dry year, and multiple dry year conditions. Water Code Section 10910 was further amended by SB 1262 on September 24, 2016, to require a Water Supply Assessment to include additional information regarding the groundwater basin designation and adjacent water systems.

California Surface Mining and Reclamation Act

The Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code [PRC], Sections 2710–2796) and its implementing regulations (California Code of Regulations [CCR], Title 14, §3500 et seq.) provide a comprehensive surface mining and reclamation policy with the regulation of surface mining operations to assure that adverse environmental impacts are minimized, and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the state's mineral resources. PRC Section 2207 provides annual reporting requirements for all mines in the state, under which the State Mining and Geology Board is also granted authority and obligations.

SMARA CCR Section 3706 applies to the discussion of the project's potential for hydrology and water quality impacts:

a) Surface mining and reclamation activities shall be conducted to protect on-site and downstream beneficial uses of water in accordance with the Porter-Cologne Water Quality Control Act, Water Code Section 13000, et seq., and the Federal Clean Water Act, 33 U.S.C. Section 1251, et seq.

b) The quality of water, recharge potential, and storage capacity of ground water aquifers which are the source of water for domestic, agricultural, or other uses dependent on the water, shall not be diminished, except as allowed in the approved reclamation plan.

c) Erosion and sedimentation shall be controlled during all phases of construction, operation, reclamation, and closure of a surface mining operation to minimize siltation of lakes and watercourses, as required by the Regional Water Quality Control Board or the State Water Resources Control Board.

d) Surface runoff and drainage from surface mining activities shall be controlled by berms, silt fences, sediment ponds, revegetation, hay bales, or other erosion control measures, to ensure that surrounding land and water resources are protected from erosion, gullying, sedimentation and contamination. Erosion control methods shall be designed to handle runoff from not less than the 20 year/l-hour intensity storm event.

e) Where natural drainages are covered, restricted, rerouted, or otherwise impacted by surface mining activities, mitigating alternatives shall be proposed and specifically approved in the reclamation plan to assure that runoff shall not cause increased erosion or sedimentation.

f) When stream diversions are required, they shall be constructed in accordance with: (1) the stream and lake alteration agreement between the operator and the Department of Fish and Game; and (2) the requirements of the Federal Clean Water Act, Sections 301 (33 U.S.C. 1311) and Section 404 (33 U.S.C. 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

g) When no longer needed to achieve the purpose for which they were authorized, all temporary stream channel diversions shall be removed, and the affected land reclaimed.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Edmund G. Brown Jr. Signed a three-bill package known as the Sustainable Groundwater Management Act (SGMA). The legislation allows local agencies to customize groundwater sustainability plans to their regional economic and environmental needs. The three bills that make up SGMA are AB 1739, SB 1319, and SB 1668. The SGMA provides for sustainable management of groundwater basins; enhances local management of groundwater consistent with rights to use or store groundwater; establishes minimum standards for effective; continuous management of groundwater; provides local groundwater agencies with the authority; technical and financial assistance needed to maintain groundwater supplies; avoids or minimizes impacts for land subsidence; improves data collection and understanding of groundwater resources and management; increases groundwater storage and removes impediments to recharge; and empowers local agencies to manage groundwater basins, while minimizing State intervention. The SGMA allows agencies, a combination of local agencies, or counties to establish a Groundwater Sustainability Agency (GSA), who is responsible for developing and implementing a groundwater sustainability plan (GSP). Imperial County serves as the GSA for all fifteen groundwater basins and subbasins within the County.

4.6.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan* pertain to hydrologic resources and the proposed project:

Water Element

Goal 4: Protection of Water Resources from Hazardous Materials. The County will adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

Programs:

- The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.
- All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity, and shall be required to implement appropriate mitigation measures for any significant impacts.

Seismic/Public Safety Element and Multi-Jurisdictional Hazard Mitigation Plan

Goal 1: Land Use Planning and Public Safety. Include public health and safety considerations in land use planning.

Objective 1.2: Regulate development within flood-way areas in accordance with Federal Emergency Management Agency (FEMA).

Goal 2: Emergency Preparedness. Minimize potential hazards to public health, safety, and welfare and prevent the loss of life and damage to health and property resulting from both natural and human-related phenomena.

Objective 2.3: Identify potential risk and damage due to inundation from dam failure and/or water releases.

Flood Hazards Programs:

1. Provide technical and policy information regarding flood hazards to developers, interested parties, and the general public.
2. Regulate and restrict development near major water courses and floodplains through application of appropriate land use measures. 3. Both the ground floor elevation of any building for human occupancy

and the driving surface, if designated evacuation routes within the 100-year floodplain, shall be constructed above the projected profile of a 100-year flood event. 4. Require all new development for human occupancy within the 100-year floodplain to be adequately flood-proofed. 5. Establish technical design criteria which minimizes or mitigates impacts associated with crossing of floodplains by development. Unless such engineering alternatives are implemented, development in floodplains is to be restricted or prohibited.

Imperial County Multi-Jurisdictional Hazard Mitigation Plan

Completed in January 2021, the Imperial County Multi-Jurisdictional Hazard Mitigation Plan (MHMP) identifies and rates local hazards and provides goals, objectives, and action plans to mitigate these hazards. The participating jurisdictions are Imperial County; the cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland; Imperial Irrigation District; and the Imperial County Office of Education. Hazards identified in the MHMP include flooding and dam failure as well as earthquakes, extreme weather, wildfire, hazardous materials, biological threats, volcanoes, and terrorism.

County of Imperial Flood Management Plan

The County of Imperial Department of Public Works (DPW) and the engineering departments of the incorporated areas are responsible for designing, constructing, and maintaining flood control facilities in their respective jurisdictions. These responsibilities include evaluation of proposed construction projects with regard to their potential to increase flood hazard. The County of Imperial Office of Emergency Services (OES) developed the Flood Management Plan (FMP) (County 2007) to identify known flood problems, reduce flooding and flood hazards, and protect the beneficial functions of floodplains. The County of Imperial recognizes that flood management is a comprehensive process that requires constant planning and implementation of flood protection and mitigation measures, strict land use regulations and enforcement, and community-wide awareness and vigilance. Included in this FMP are the County of Imperial and cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and Westmorland, with participation and input from the Imperial Irrigation District, Imperial County School District, and the Salton Community Services District.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to hydrology and water quality and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal COS-4.5: Water Management. A balanced and regionally integrated water management approach to achieve the long-term viability of the County’s water quality and supply.

Policy COS-4.1: Water Conservation. Require development to reduce the waste of potable water through use of efficient technologies and conservation efforts that minimize the County’s dependence on imported water and conserve groundwater resources.

Policy COS-4.2: Drought-Efficient Landscaping. Require efficient irrigation systems and in new development encourage the use of native plant species and non-invasive drought tolerant/low water use plants in landscaping.

Policy COS-4.3: Stormwater Filtration. Maximize stormwater filtration and/or infiltration in areas that are not subject to high groundwater by maximizing the natural drainage patterns and the retention of natural vegetation and other pervious surfaces. This policy shall not apply in areas with high groundwater, where raising the water table could cause septic system failures, moisture damage to building slabs, and/or other problems.

Policy COS-4.4: Groundwater Contamination. Require land uses with a high potential to contaminate groundwater to take appropriate measures to protect water supply sources.

Policy COS-4.5: Recycled Water. Promote the use of recycled water and gray water systems where feasible.

Goal COS-5: Protection and Maintenance of Water Resources. Protection and maintenance of local reservoirs, watersheds, aquifer-recharge areas, and natural drainage systems to maintain high-quality water resources.

Policy COS-5.1: Impact to Floodways and Floodplains. Restrict development in floodways and floodplains in accordance with policies in the Flood Hazards section of the Safety Element. Development in floodways and floodplains has the potential to alter natural hydrologic flow and cause soil erosion and increased stormwater runoff—including loss of wetland and health issues related to surface and groundwater contamination.

Policy COS-5.2: Impervious Surfaces. Require development to minimize the use of directly connected impervious surfaces and to retain stormwater run-off caused from the development footprint at or near the site of generation.

Policy COS-5.3: Downslope Protection. Require development to be appropriately sited and to incorporate measures to retain natural flow regimes, thereby protecting downslope areas from erosion, capturing runoff to adequately allow for filtration and/or infiltration, and protecting downstream biological resources.

Policy COS-5.4: Invasive Species. Encourage the removal of invasive species to restore natural drainage systems, habitats, and natural hydrologic regimes of watercourses.

Policy COS-5.5: Impacts of Development to Water Quality. Require development projects to avoid impacts to the water quality in local reservoirs, groundwater resources, and recharge areas, watersheds, and other local water sources.

4.6.3 Significance Criteria and Analysis Methodology

4.6.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's hydrology and water quality impacts using the following significance criteria:

The significance criteria for this analysis were developed from Appendix G of the CEQA Guidelines. The proposed project would have a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted); or
- Otherwise substantially degrade water quality.

CEQA Appendix G Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to hydrology and water quality if it would:

a) violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater water quality;
b) substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
c) substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
    - result in substantial erosion or siltation on- or off-site,
    - substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite,
    - create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or
    - impede or redirect flood flows;
d) in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
e) conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

4.6.3.2 Analysis Methodology

Evaluation of the hydrology and water quality impacts in this section is based primarily on the Hydrologic and Water Quality Study prepared by Dudek (2018). This study serves as an update to the 2004 Hydrology Study and Drainage Analysis prepared by Joseph Bonadiman & Associates in support of the 2008 EIR/EIS. The Bonadiman hydrology study included a rainfall/runoff analysis comparing existing with proposed conditions for the drainage area west of the proposed berm and provided a conclusion that natural flows could be conveyed safely around the berm within a graded channel with a bottom width of 50 feet and a berm height of 5 feet (assuming 2 feet of freeboard). Mitigation Measure 3.3-7, as provided in the 2008 EIR/EIS, consists of this berm and the accompanying conveyance channel, and is required to convey flows around the project site.

While the Bonadiman Hydrology Study incorporated the 50-foot-wide channel to convey flows around the project site, this analysis was conducted following the latest grading plans which do not include the conveyance channel. In addition, the 40-acre Georgia Pacific parcel was not included in the Bonadiman hydrology study (as this parcel was included later). For these reasons, the updated 2018 Hydrologic Study and updated 2016 Jurisdictional Delineation were prepared.

The 2018 Hydrologic Study (Dudek 2018) provides a detailed hydrologic analysis of the Quarry watershed for both the existing and proposed conditions as well as a hydraulic analysis to assist with determining the proposed impacts to the mapped U.S. ACOE jurisdictional area (HES 2016). The hydraulic analysis was specifically designed to identify potential impacts related to the proposed berm intended to divert runoff from entering the extraction sites, and included scour and sediment deposition analyses. Analyses were conducted using a spectrum of storm events relevant to jurisdictional delineation in the arid southwest (2-year, 5-year, 10-year), as well as storm events relevant to design assessment (25-year and 100-year). All existing and proposed components of the project within the Quarry watershed, including the 40-acre George Pacific property, were included in this analysis. Detailed methodologies for the hydrologic and hydraulic analyses are provided in Appendix G-1.

Evaluation of groundwater levels and quality with project implementation were based on the *Update on Groundwater Conditions* memorandum prepared by Todd Groundwater in 2018 (Appendix G-2). Groundwater conditions were assessed with respect to thresholds for short-term water level changes, long-term water level changes, and groundwater quality. The memorandum focuses on recent changes in groundwater conditions that may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. Current groundwater monitoring of Coyote Wells Valley Basin and changes in groundwater conditions in recent years were examined.

4.6.4 Project Impacts and Mitigation Measures

4.6.4.1 2008 EIR/EIS Impact Analysis

Under the 2008 EIR/EIS, impacts to hydrology and water quality were determined to be less than significant with mitigation or less than significant.

Impacts to Surface Water

Based on hydrology reports completed for the USG Expansion/Modernization Project (Joseph E. Bonadiman & Associates 2004), the 2008 EIR/EIS found that the expansion of the Quarry would generally not produce a significant reduction of runoff of tributaries to Fish Creek because 1) the Quarry expansion is adjacent to a mountain range that provides the smallest contribution of rainfall in the entire drainage area due to topographic and geologic conditions; and 2) rainfall east of the Quarry or within the Quarry will percolate into the ground, recharging the water table. It was concluded that the proposed Quarry expansion will have no effect on the natural groundwater process, and groundwater would continue to transmigrate towards Fish

Creek along the standard pattern. However, the main drainage patterns from the western mountain range of the drainage area produces the largest flow rate tributary to Fish Creek, potentially causing a disruption of periodic flows at the Quarry site. Consequently, the 2008 EIR/EIS includes the following mitigation measure to address the disruption in flow:

> ***Mitigation Measure 3.3-7:*** *An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.*

Impacts to Groundwater

The 2008 EIR/EIS indicates that the existing and proposed Quarry water wells are located within the Borrego Valley Groundwater Basin (7-24). The Borrego Valley Groundwater Basin is distinctly different from the Coyote Wells Valley Groundwater Basin (7-29) in which the USG production wells for the Plant are located. The Borrego Valley Groundwater Basin consists of sedimentary deposits derived from the surrounding mountain ranges. Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 feet below ground surface (bgs) in the center of the basin with total dissolved solids levels reported in the range of 8,000 parts per million (ppm). An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 feet bgs at some locations with TDS levels reported in the range of 1,400 ppm. The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. The 2008 EIR/EIS determined that the increase in pumping at the Quarry that would result from development and operation of Well No. 3 would not result in the substantial depletion of the Borrego Valley Groundwater Basin. This is because the proposed increase in pumping would be minimal relative to the existing use of groundwater for agriculture and relative to the natural rate of discharge from the basin. The proposed project would increase groundwater pumping in the Borrego Valley Groundwater Basin from the current permit limit of approximately 7.8 AF/yr to approximately 26 AF/yr. In contrast, the natural discharge from the Borrego Valley Groundwater Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. Therefore, the potential of the proposed project to have a perceptible effect on the existing water levels or rate of decline of the basin was found to be less than significant. Additionally, water quality data from the USG test hole also demonstrates that the new well would tap groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the potential of the proposed project to affect the flow of the springs was found to be less than significant. The 2008 EIR/EIS determined that the potential of pumping at Well No. 3 to degrade water quality by causing the vertical migration of saline water from the shallow aquifer to the deeper aquifer would be less than significant. This is because the USG test hole drilling results indicate that the shallow aquifer is not present in the area of the proposed Well No. 3.

4.6.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) based on the new information provided in the updated technical studies prepared for the project. The 2019 SEIS determined that project impacts related to the redirection of flood flows and water quality would be less than significant and no new mitigation was provided.

4.6.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or worsen an existing significant impact related to hydrology and water quality. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

The Borrego Valley Groundwater Basin (7-24) was modified in 2016 by the California Department of Water Resources (DWR). The basin was divided into two subbasins: Borrego Valley—Borrego Springs (7-24.01) and Borrego Valley—Ocotillo Wells (7-24.02) (DWR 2021a). The proposed Quarry Well No. 3 is located in the Ocotillo Wells subbasin.

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley)—collectively known as the Sustainable Groundwater Management Act (SGMA), which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. Through SGMA, DWR provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires the preparation of groundwater sustainably plans (GSPs) for crucial (i.e., medium to high priority) groundwater basins in California. Low- and very low-priority basins may adopt these plans, but are not required to, and neither are adjudicated basins. The project site is located within the Ocotillo Wells subbasin of the Borrego Valley Groundwater Basin, which has been designated a very low priority basin (DWR 2021b). In September 2015, the Imperial County Board of Supervisors provided notice to DWR that Imperial County had resolved to assume the role of GSA for all groundwater basins underlying the County. In its resolution to become a GSA (Imperial County Board of Supervisors Resolution No. 2015-122), the County expressed its commitment to sustainable groundwater use and cited its jurisdiction over groundwater basins county-wide. The County also cited its long experience and background in groundwater management and monitoring, including the County Groundwater Management Ordinance. As described under Section 2.2, “Project Background,” of Chapter 2, “Project Description,” the Settlement Agreement replaced Mitigation Measures 3.3-1 and 3.3-2 adopted in the 2008 EIR/EIS with new mitigation measures (Mitigation Measures 3.3-1-A through 3.3-1-G). The measures are intended to ensure that project impacts on individual groundwater wells within the Coyote Wells Groundwater Basin are less than significant. The Quarry is not located within the Coyote Wells Groundwater Basin. Therefore, the Settlement Agreement mitigation measures are not applicable to this analysis.

New Information

A Jurisdictional Delineation (Hernandez Environmental Services 2016), Hydrologic and Water Quality Study (Hydrology Study) (Dudek 2018), and Update on Groundwater Conditions Memorandum (Todd Groundwater 2018) were completed as part of the 2019 SEIS.

The Jurisdictional Delineation identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The Jurisdictional Delineation noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The Jurisdictional Delineation recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction.

The Hydrology Study evaluated the existing and proposed hydrology and water quality conditions for the Quarry watershed. The study focused on changes in hydrology due to mine expansion activities under the USG Expansion/Modernization Project. Based on the results of the study, it was recommended that the berm required by Mitigation Measure 3.3-7 of the 2008 EIR/EIS be armored along the westerly bank with rock riprap to decrease the likelihood and severity of erosion damage to the berm. The Hydrology Study did not evaluate the impacts of the development of the proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

The Update on Groundwater Conditions Memorandum (Todd 2018) was developed to assess groundwater conditions in the Coyote Wells Valley, Borrego Valley-Borrego Springs, Borrego Valley-Ocotillo Wells, and Ocotillo-Clark Valley groundwater basins, and to identify whether changes in the groundwater conditions of these basins may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. With regard to the Borrego Valley-Ocotillo Wells subbasin, which the existing Quarry Well No. 2 and proposed Well No. 3 are located, the study notes that information on pumping in Ocotillo Wells is minimal, but the subbasin likely has very limited pumping. DWR estimated pumping of 256 AFY as part of its 2018 SGMA Basin Prioritization Process and Results (DWR 2021b). The study concludes that it is unlikely that the San Sebastian Marsh groundwater depletion is affected by current pumping at Well No. 2 because of the relatively large distance of more than seven miles from the San Sebastian Marsh; because both Well No. 2 pumps from the deeper aquifer; and because the San Sebastian Marsh is located within the Ocotillo-Clark Valley groundwater basin, and the shared boundary between the Ocotillo Wells subbasin and Ocotillo-Clark Valley groundwater basin is the trace of the Coyote Creek Fault and Superstition fault, which are regarded as barriers to groundwater flow. Based on the distance from the marsh, relatively low rate of pumping, and the presence of intervening faults and aquitards, the study concluded that pumping at Quarry Well No. 2 is unlikely to have caused changes in San Felipe Creek and the San Sebastian Marsh. The study also notes that other pumping in the basin is ongoing and minor, and that any changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.

Based on the results of the Jurisdictional Delineation, the 2019 SEIS recommended new mitigation that requires the restoration and preservation of offsite properties with similar hydrologic functions as the Quarry drainages to off-set the impacts to jurisdictional drainages within the Quarry.

Significance Determination

Based on project revisions, changed circumstances, and new information that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.6.4.4 Subsequent Environmental Analysis

Impact 4.6-1: The Project Could Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface or Ground Water Quality

Quarry, Well No. 3, and Associated Pipeline

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. As these project components would remain essentially unchanged, no new or more severe water quality impacts would be expected to occur under the proposed project. However, since publication of the 2008 EIR/EIS, an updated Hydrologic and Water Quality Study (Dudek 2018; Appendix G-1) was prepared for the project which provides new information relevant to this analysis. Following is a summary of the findings of the updated 2018 Hydrology Study on water quality.

The proposed project's potentially adverse effects to downstream water quality are considered less than significant due to the following:

- Most, if not all, water would be retained within the proposed excavation pits. As a result, the total volume of water discharged from the Quarry watershed would be reduced.
- The proposed project is not anticipated to adversely impact the water quality in the Salton or Imperial Valley Drains, which are listed as impaired for nutrients, pesticides, herbicides, arsenic and selenium. While arsenic is present at two parts per million (ppm) in the black anhydrite which occurs at the bottom of the gypsum seam, the potential exposure of this material during mining operations would not result in a significant release of arsenic to downstream waters as this material is not mined and typically left in place. Furthermore, the natural concentrations of arsenic in surrounding soils in Imperial County are likely greater than 2 ppm (Bradford et. al., 1996, cited in BLM 2019) and serve as the primary source of arsenic to the Salton Sea. A reduction in discharge from the Quarry watershed would likely result in a reduction of natural arsenic transported to downstream waters.
- Groundwater elevations from the nearest well (approximately seven miles north-northwest of the project site) are approximately 400 feet below the lowest point in the project site. Impacts on groundwater quality from increased localized infiltration during the infrequent but intense storm events would be negligible.
- The potential effect to downstream water quality conditions related to the dust generated from mining activities would not be considered adverse due to required BMPs for dust control and County of Imperial fugitive dust rules. Any potentially adverse effects would be reduced by the mitigation measures provided in the 2008 EIR/EIS.

For these reasons, the Quarry expansion and development of proposed Well No. 3 and associated pipeline would have a less than significant impact on water quality and would not violate any water quality standards or discharge requirements.

Level of Significance: Less than significant**.**

Mitigation Measures: None required.

Viking Ranch Restoration Site

The Hydrology Study (Dudek 2018) did not evaluate the impacts of the development of proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

During restoration activities on the site, erosion control and pollution prevention BMPs would be required as part of the SWPPP prepared for the site. These BMPs would likely include scheduling ground disturbing activities outside of the rainy season and stabilizing soils by seeding exposed soils and using straw mulch or mats. Additional BMPs are provided in the HMMP (Dudek 2021) prepared for the site including inspecting and repairing onsite equipment regularly to prevent leaks of hazardous substances. Implementation of BMPs would be overseen by the project biologist or a qualified SWPPP practitioner.

Level of Significance: Less than significant**.**

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

No development or other ground disturbing activities would be implemented on the Old Kane Springs Road site. Thus, no impacts to water quality would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required**.**

Impact 4.6-2: The Project Could Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin

Quarry, Well No. 3, and Associated Pipeline

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. However, since publication of the 2008 EIR/EIS, an updated groundwater conditions memorandum (Todd 2018; Appendix G-2) was prepared for the project. Following is a summary of the findings of the 2018 Groundwater Memorandum.

- *Coyote Wells Valley.* The updated groundwater conditions memorandum focused on groundwater conditions in the Coyote Wells Valley Basin, where USG has developed and maintained a monitoring program and implemented performance standards that serve as an early warning to changes in the Coyote Wells Valley Basin. Water levels and water quality data are compiled, analyzed, and reported annually. Only limited changes have occurred in the basin from groundwater users. Changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.
- *Borrego Valley-Borrego Springs.* The Borrego Valley has been subdivided into the Borrego Springs Subbasin and Ocotillo Wells Subbasin. Critical overdraft conditions in the Borrego Springs Subbasin are a long-term concern that are being addressed through the SGMA process. However, the intensive pumping in this basin is not likely the cause of sudden changes in San Felipe Creek flows because the Borrego Springs pumping has continued over many years at a considerable distance from San Felipe Creek. Changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.
- *Borrego Valley- Ocotillo Wells.* Existing Well No. 2 and proposed Well No. 3 are in the Ocotillo Wells Subbasin, adjacent to and upstream of San Felipe Creek. Pumping from Well No. 2 is unlikely to have caused changes in San Felipe Creek because of its small pumping, pumping from the deep aquifer, distance from San Sebastian Marsh, and existence of intervening fault barriers. Other pumping in the basin is ongoing and minor. Changes in the basin since 2008 do not change the findings of the 2008 EIR/EIS.
- *Ocotillo-Clark Valley.* San Sebastian Marsh is in Ocotillo-Clark Valley Basin, and thus, this basin was considered in the updated groundwater conditions memorandum. While a systematic impact analysis was not conducted, Todd (2018) notes that groundwater pumping has changed recently in proximity to San Sebastian Marsh. Specifically, groundwater pumping has been reduced by the conversion of historical agricultural lands to a solar farm. While speculative, it is possible that recent cessation of agricultural pumping from deep aquifers, with reduction of irrigation return flows that provide recharge to shallow aquifers, has resulted in downstream loss of creek flow.

Based on the analysis and conclusions of the updated groundwater conditions memorandum, the new information provided in the updated groundwater conditions memorandum does not change the conclusions of the 2008 EIR/EIS with regard to groundwater resources. No new or more severe impacts would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Off-site Mitigation Sites

No development or other activities which could affect groundwater levels are proposed at the Viking Ranch or Old Kane Spring sites. Thus, there would be no impact and no mitigation is required.

Level of Significance: No impact.

Mitigation Measures: None required.

Impact 4.6-3: The Project Could Substantially Alter the Existing Drainage Pattern of the Site Resulting in Substantial Erosion or Siltation, Flooding on or Offsite, the Provision of Substantial Additional Sources of Polluted Runoff, or the Impediment or Redirection of Flood Flows

Quarry Expansion Area

Quarry operations would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. However, since publication of the 2008 EIR/EIS, an updated Hydrologic and Water Quality Study (2018 Hydrologic Study) (Dudek 2018; Appendix G-1) was prepared for the project. Following are excerpts from the 2018 Hydrologic Study which describes and analyzes the anticipated changes to drainage volumes and patterns on and downstream of the project site.

Runoff in the existing, unnamed ephemeral creek bed would be decreased by the proposed Quarry operations. As described in greater detail below, the proposed site grading would capture runoff from the easterly portion of the watershed and convey it into a new drainage system while runoff from the westerly portion would be directed around Quarry operations by the proposed berm and continue to drain into Fish Creek to the north. For this reason, the watershed was analyzed by Dudek as two separate drainage areas corresponding to two separate drainage paths. Hydrology maps are included in Appendix H of Appendix G-1 for the existing and proposed conditions.

Table 4.6-1, "Existing Conditions Unit Hydrograph Peak Flowrate," and Table 4.6-2, "Proposed Conditions Unit Hydrograph Peak Flowrate," show the expected peak flows from the unit hydrograph analyses for the existing and proposed conditions. All input and results from the hydrology model are provided in Appendix H of Appendix G-1.

Table 4.6-1
Existing Conditions Unit Hydrograph Peak Flowrate

2 Year (cfs)	5 Year (cfs)	10 Year (cfs)	25 Year (cfs)	100 Year (cfs)
750	1,500	2,200	3,500	5,800

Source: Dudek 2018

Table 4.6-2
Proposed Conditions Unit Hydrograph Peak Flowrate

Watershed	2 Year (cfs)	5 Year (cfs)	10 Year (cfs)	25 Year (cfs)	100 Year (cfs)
Westerly	450	900	1,300	2,000	3,300
Easterly	350	700	1,011	1,600	2,600

Source: Dudek 2018

Easterly Drainage Area

Although the conveyance of potential flow through the Quarry was not modeled, it is reasonable to assume that most, if not all, runoff generated within the easterly section of the Quarry watershed would be captured and retained within the proposed excavated pits. Any flows exceeding excavation pit storage would be conveyed downstream into the Fish Creek alluvial fan system with a decreased total volume and potentially reduced peak flow rate. Based on the proposed topography within the Quarry, stormwater captured in the extraction pits would eventually percolate into the local aquifer and/or evaporate. For these reasons, drainage in the easterly drainage area would not result in flooding on or offsite.

Because drainage flows in the easterly drainage area would be impounded onsite and would primarily evaporate or percolate into the ground, the project would not result in on or off-site flooding or significantly increase sediment or otherwise-polluted runoff entering Fish Creek or downstream waterways.

Westerly Drainage Area

The project proposes an earthen berm along the western edge of the proposed Quarry extent in order to direct surface flows generated within the western half of the Quarry watershed northward to Fish Creek, around Quarry activities.

Analysis of the HEC-RAS model results (Appendix H of Appendix G-1) were used by Dudek (2018) to identify locations along the current berm design that would potentially overtop, allowing surface flow into the Quarry. The HEC-RAS 100-year event model indicated five stations where the berm would not provide the required 2-feet of freeboard. Further, the model could not rule out the potential for runoff from a 100-year event to overtop the berm in additional locations. Model stations spaced 500 feet apart may not have captured sections of the berm where water would exceed the proposed 5-foot berm height. For example, the berm intersects the main channel where the channel banks are taller than 8 feet (adjacent Phase 2); at this location the berm would act as a check dam, impounding all flow and overtopping directly into the Quarry excavation pits. Overtopping of the proposed berm could further reduce surface flows and sediment loading to Fish Creek Wash downstream.

To address the identified deficiencies in the existing berm design, Dudek (2018) recommended modifications including, at a minimum, a 50-foot-wide conveyance channel on the western side of the berm. To assist with the conveyance of surface flows around the berm, Dudek further recommended that the berm design include armoring of the westerly bank of the berm with rock riprap to decrease the likelihood and severity of erosion damage to the berm for flows generated by a 25-year design storm. The 25-year storm was selected because the berm is not intended to protect life, property, or civil improvements. In a larger storm event, it would be expected that the riprap armoring would fail and the berm would suffer significant damage or failure. These recommendations would be incorporated into the final berm design by a qualified Civil Engineer as required by Mitigation Measure 4.6-1 below.

Downstream Waterways

As demonstrated above, the project is expected to result in the downstream reduction of surface flow and sediment loading to the Fish Creek Alluvial Fan. The potential reduction in accompanying groundwater recharge at the apex of the Fish Creek Alluvial Fan would likely be offset by increased recharge within the coarse alluvium of the Quarry watershed and is overall considered minimal with the project site contributing less than 1 percent of the total Ocotillo Lower Felipe HA land cover. As the perennial surface waters in the lower San Felipe River are not dependent on surface flows from Fish Creek Wash, the project would have no impact on creek flows or the associated habitat for desert pupfish (see Section 4.2, “Biological Resources”).

In conclusion, the overall drainage patterns of the project site would remain unchanged with any runoff that does not evaporate or percolate into the coarse alluvium ultimately draining to the Fish Creek Alluvial Fan. Because drainage within the Easterly Drainage Area would be impounded, total volumes and peak flow rate would decrease thus no flooding or other adverse impacts would occur. With implementation of Mitigation Measure 3.3-7 as provided in the 2008 EIR/EIS and Mitigation Measure 4.6-1 as provided below, drainage within the Westerly Drainage Area would be directed northward to the Fish Creek Alluvial Fan consistent with existing conditions and no flooding or other adverse impacts would occur.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.6.4 for the full text of each measure):*

- *2008 EIR/EIS*
  - *Mitigation Measure 3.3-7*

Mitigation Measure: *Implement the following new mitigation measure:*

Mitigation Measure 4.6-1: *The final design for the proposed berm along the westerly edge of the Quarry shall incorporate the recommendations provided in the Hydrologic and Water Quality Study prepared by Dudek dated April 2018 and appended to this SEIR. These recommendations include a 50-foot-wide conveyance channel on the western side of the berm and armoring of the westerly bank of the berm with rock riprap.*

Level of Significance After Mitigation: Less than significant.

Well No. 3 and Associated Pipeline

Development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. The 2018 Hydrology Study did not evaluate the impacts of Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed pipeline would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Viking Ranch Restoration Site

Restoration activities would result in substantial changes to the existing drainage patterns on the Viking Ranch site. According to the 2021 HMMP (Dudek), the overall Viking Ranch site would be graded to be compatible with the surrounding native land surface elevations with rough contour grading of ephemeral channels taking place to create micro-topographic variances as shown in Figure 2-6, "Viking Ranch Conceptual Restoration Plan." The design is intended to re-establish braided flow patterns across the site, consistent with adjacent Coyote Creek wash. Final grading plans and specifications would be prepared by a registered landscape architect and, or civil engineer in consultation with the project biologist and the final grade would be reviewed and approved by the project biologist. As the proposed restoration activities would restore natural hydrologic functioning of the site consistent with the surrounding Coyote Creek wash, no flooding or other adverse effects would occur. As discussed in Impact 4.6-1, proposed seeding of graded areas would minimize potential erosion once restoration is complete.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Old Kane Springs Road Preservation Site

No grading, development, or other activities which could alter the existing drainage patterns on the Old Kane Springs site are proposed. There would be no impacts to drainage patterns and no erosion or siltation, flooding on or offsite, impediment of flood flows, or release of polluted runoff would occur.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.6-4: The Project Could Release Pollutants in the Event of Inundation From Flood, Tsunami, or Seiche

As described previously, portions of the project site are located within a FEMA flood zone as depicted in Figure 4.6-2. The floodplain encompasses the drainage which flows through the center of the valley and adjacent portions of the Quarry, as well as portions of the proposed pipeline alignment, and the proposed site of Well No. 3.

Quarry operations and development of Well No. 3 and the associated pipeline would occur in substantially the same locations and in the same manner as previously described and evaluated in both the 2008 EIR/EIS and the 2019 SEIS. As these project components would remain essentially unchanged, no new or more severe flooding impacts at these sites would occur under the proposed project.

If inundation from a flood event were to occur during project construction at the Viking Ranch site, hazardous materials such as gasoline, diesel fuel, equipment lubricants, and other pollutants could enter floodwaters. However, project BMPs would limit construction to outside of the rainy season thereby minimizing the potential for flooding. Furthermore, all hazardous substances would be stored properly, in accordance with product labeling and appliable state and local regulations.

Neither of the off-site mitigation sites are located close enough to the Pacific Ocean to be affected by a tsunami wave. A seiche is a standing wave in an enclosed or partially enclosed body of water. The off-site mitigation sites are similarly not close enough to any enclosed waterbodies to be affected by a seiche wave. Therefore, this impact would be less than significant, and no mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

Impact 4.6-5: The Project Could Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan

As described previously, the project site is subject to the Water Quality Control Plan for the Colorado River Basin (Basin Plan). As described in Impacts 4.6-1 through 4.6-7 above, the project would not result in any significant hydrology or water quality impacts. Therefore, the proposed project would not interfere with the implementation of the Basin Plan. This impact would be less than significant, and no further mitigation is required.

Level of Significance: Less than significant.

Mitigation Measures: None required.

SECTION 4.7:
LAND USE AND PLANNING

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SECTION 4.7:
LAND USE AND PLANNING

This section of the subsequent environmental impact report (SEIR) describes the existing land use conditions on and around the project impact area including existing land uses, adopted general plan land use classifications and zoning designations, and other applicable management plans and policies pertinent to the project. This chapter also describes the applicable plans and policies that guide land use and development in the project area, and it evaluates the project's consistency with these plans and policies and other existing land use regulations, as they relate to environmental protection.

This section identifies any potentially significant land use impacts and, if necessary, appropriate mitigation measures to avoid or reduce such impacts. Pursuant to Section 15358(b) of the CEQA Guidelines, mitigation measures are proposed only to address physical impacts that may result from the project.

4.7.1 Environmental Setting

The project site and offsite mitigation properties are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea level. This area is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley. Predominant land uses include open space, agriculture, and scattered rural residences.

4.7.1.1 Land Use Conditions at the Time of the 2008 EIR/EIS

Quarry

At the time the 2008 EIR/EIS was published, the 2,048-acre Quarry consisted of approximately 1,668 acres of private land and 380 acres of unpatented placer mining claims on federal land administered by the BLM. At that time, approximately 339 acres of surface disturbances had occurred. Major components of the Quarry facility included quarries, overburden storage sites, crushing facilities, agricultural product silos, railroad, utilities, and other equipment.

Well No. 3 and Associated Pipeline

The site of proposed Well No. 3 and associated pipeline alignment are located north and northeast of the Quarry and about six miles south of State Highway 78 in an area characterized by the 2008 EIR/EIS as flat desert open space. The well site and western segment of the pipeline alignment are located on private land owned by USG Corporation while the central and eastern segments of the pipeline alignment are on federal land managed by the BLM. A portion of the northwest segment of the proposed pipeline alignment crosses the Anza Borrego Desert State Park. No development was present in 2008.

Surrounding Land Uses

The 2008 EIR/EIS noted that east, southeast, and south of the Quarry is the Fish Creek Mountain Wilderness Area and to the north, west and south is the Anza Borrego Desert State Park. The areas on either side of Split Mountain Road are characterized by large rural residential properties with a few scattered residences. At the intersection of Split Mountain Road and Highway 78 is Ocotillo Wells and the 14,000-acre Ocotillo Wells State Vehicular Recreation Area.

4.7.1.2 Land Use Conditions at Present

Quarry

The overall land uses on and surrounding the Quarry remain unchanged from those described in the 2008 EIR/EIS. As of 2022, approximately 437 acres of surface disturbances have occurred at the Quarry (BLM 2019). The Quarry facilities, narrow-gauge railroad, and adjacent unpaved direct access road are the only structures or infrastructure in the vicinity of the project site.

Well No. 3 Site and Pipeline Alignment

The land use conditions on and surrounding the site of Well No. 3 and associated pipeline alignment remain essentially unchanged from those described in the 2008 EIR/EIS. Both the well site and pipeline alignment remain undeveloped with no structures or other improvements. The nearest sensitive receptors are rural residences north and northwest of the well site and pipeline alignment.

Viking Ranch Restoration Site

The Viking Ranch Restoration Site consists of approximately 207 acres of former agricultural land located about 0.5 miles east of the north end of Di Gorgio Road, northeast of the town of Borrego Springs in San Diego County. The topography of the site slopes gently from the northwest to the southeast. The existing vegetation is highly disturbed due to past use as an orchard and consists of sparse, patchy vegetation with scattered tree stumps and branches (Dudek 2021). Surrounding land uses include privately owned orchards to the south and the Anza-Borrego Desert State Park in all other directions. The nearest sensitive receptor is a rural residence located approximately 900 feet west of the southwest corner of the site.

Old Kane Springs Road Preservation Site

The Old Kane Springs Road Preservation Site consists of approximately 120 acres of privately owned desert open space along Old Kane Springs Road located in the far eastern portion of San Diego County. The site is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. The topography of the site slopes gently from the southwest down to the northeast. Vegetation communities present on the site include scrub/chapparal and riparian/bottomland habitat. The predominant surrounding land use is undeveloped desert, some of which is privately owned, but most is part of the Anza Borrego Desert State Park.

Land Use Designations and Zoning

The Quarry, Well No. 3 Site, and Pipeline Alignment parcels are located in Imperial County and are subject to the land use regulations of the Imperial County General Plan and Imperial County Zoning Ordinance. These sites are generally designated S-2 (Open Space/Preservation). The Quarry parcels (including the expansion area) are zoned either S-2 (Open Space/Preservation) or BLM (see Table 2-1, "Assessor's Parcel Numbers"). The proposed site of Well No. 3 is primarily zoned S-2 (Open Space/Preservation), with one parcel zoned STATE (APN 033-010-016). The S-2 Zone is the County's Open Space Preservation Zone. The primary intent of this zoning designation is to preserve the significant cultural, biological, and open space resource areas of the county. Permitted uses in the S-2 zone include agriculture and accessory uses, mineral extraction, pasturing and grazing, solar energy generation, public buildings, and storage. Additional industrial, manufacturing, commercial, energy, and recreational uses are allowed with issuance of a CUP. The minimum lot size in the S-2 zone is 20 acres and the maximum height limit is 40 feet. The BLM and STATE zoning designations indicate parcels which are owned by the federal and State governments and not subject to County zoning requirements (Imperial County 2022).

The Quarry and Well No. 3 and the associated pipeline are associated with surface mining operations and are consistent with the Recreation/Open Space designation of the Imperial County General Plan (Imperial County 2015). Title 9, Land Use Ordinance, requires approval of a CUP to allow surface mining operations on lands zoned S-2.

The offsite mitigation properties are in San Diego County and are subject to the land use regulations of the San Diego County General Plan and San Diego County Zoning Ordinance. The Viking Ranch Restoration Site is designated Semi-Rural Residential (SR-4). The Old Kane Springs Road preservation site is designated Rural Lane (RL-30) (San Diego County 2011). Both properties are zoned by San Diego County as S92 (General Rural). This zoning designation is intended to provide approximate controls for land, which is rugged terrain, watershed, dependent on ground water for a water supply, desert, susceptible to fire and erosion, or subject to other environmental constraints (County of San Diego 2022).

4.7.2 Regulatory Setting

The Quarry, Well No. 3 site, and proposed pipeline alignment are each located in unincorporated Imperial County and are subject to the goals and objectives of the Imperial County General Plan (County General Plan). Additionally, these sites are subject to the land use regulations contained in the Imperial County Zoning Ordinance. Applicable Imperial County planning policies and zoning regulations that pertain to the project site are described below followed by a discussion of the project's consistency or inconsistency with each relevant objective.

The offsite mitigation properties (Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site) are in unincorporated San Diego County and are subject to the goals and policies of the San Diego County General Plan as well as the land use regulations contained in the San Diego County Zoning Ordinance.

Potential conflicts with planning policies as contained in the Imperial County General Plan, the San Diego County General Plan, and other applicable regulatory and management plans do not inherently result in a significant effect on the environment. Instead, "effects analyzed under CEQA must be related to a physical change in the environment" (CEQA Guidelines Section 15358(b)). CEQA Guidelines Section 15125(d) provides that an EIR shall discuss any inconsistencies between a proposed project and the applicable general plan in the setting section of the document rather than as an impact (see Table 4.7-1, "Project Consistency with Local Planning Documents," below). Appendix G of the CEQA Guidelines indicates that a project would result in a significant impact related to land use and planning if it would "conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect." Therefore, while this section of the SEIR provides an analysis of the project's consistency with applicable plans, policies, and regulations, any impacts that may result from such conflicts are analyzed elsewhere in this SEIR.

4.7.2.1 Imperial County General Plan

The Imperial County General Plan consists of ten elements: Land Use, Housing, Circulation and Scenic Highways, Noise, Seismic and Public Safety, Agricultural, Conservation and Open Space, Geothermal/Alternative Energy and Transmission, Water, and Parks and Recreation. The General Plan designates land use categories which identify locations and describe the type and maximum allowable density of ultimate development. This subsection lists those General Plan goals, objectives, and policies that pertain to land use and planning and apply to the proposed project. A project consistency analysis is provided in Table 4.7-1.

Conservation and Open Space Element

Objective 1.1: Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.

Objective 4.2: Require that mineral extraction and reclamation operations be performed in a way that is compatible with surrounding land uses and minimize adverse effects on the environment.

Objective 4.3: Safeguard the use and full development of all mineral deposits.

Objective 4.4: Regulate the development adjacent to or near all mineral deposits and geothermal operations due to the potential for land subsidence.

Land Use Element

Objective 3.2: Preserve agriculture and natural resources while promoting diverse economic growth through sound land use planning.

Objective 3.3: Attain County growth and development patterns that are orderly, safe, and efficient utilizing appropriate financing resources.

Objective 3.6: Recognize and coordinate planning activities as applicable with the Bureau of Land Management (BLM), and the California Desert Conservation Plan.

Objective 3.8: Utilize non-agricultural land as a resource to diversify employment opportunities and facilitate regional economic growth. Uses must be consistent with each site's resource constraints, the natural environment, and the County Conservation and Open Space Element.

Goal 7: Identify and protect areas of regionally-significant mineral resources which are in locations suitable for extractive uses.

Objective 7.1: Provide adequate space and land use classifications to meet current and projected economic needs for extractive activities.

Objective 7.2: Require that extractive uses are designed and operated to avoid air and water quality degradation, including groundwater depletion, other adverse environmental impacts, and comply with the State Surface Mining and Reclamation Act and County Surface Mining Ordinance.

Objective 9.1: Preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes.

Objective 9.7: Implement a review procedure for land use planning and discretionary project review which includes the Imperial County Air Pollution Control District.

4.7.2.2 Imperial County Zoning Ordinance

The zoning for the project site is principally S-2 (Open Space/Preservation), but portions of the site are also federally, or state owned and not subject to County zoning regulations (see Table 2-1). The S-2 zoning designation is the County's Open Space Preservation Zone which is intended to preserve the significant cultural, biological, and open space resource areas of the county. Permitted uses in the S-2 zone include agriculture and accessory uses, mineral extraction, pasturing and grazing, solar energy generation, public buildings, and storage. Additional industrial, manufacturing, commercial, energy, and recreational uses are allowed with the issuance of a CUP. The minimum lot size in the S-2 zone is 20 acres and the maximum height limit is 40 feet. The BLM and STATE zoning designations indicate parcels which are owned by the federal and State governments and not subject to County zoning requirements (Imperial County 2022).

Mining activities may be permitted within any County zoning designation, including lands designated as Open Space Preservation, subject to the provisions of the County Surface Mining and Reclamation Ordinance. As the local land use authority, Imperial County authorizes mining activities on unincorporated lands through the issuance of surface mining permits and approval of reclamation plans pursuant to Imperial County Code of Ordinances, Title 9, Land Use Code, Division 20, Surface Mining and Reclamation. The provisions of the County's Surface Mining and Reclamation Ordinance apply to all lands within the county, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation. Thus, the existing quarry and the proposed project are consistent with the County Zoning Ordinance.

4.7.2.3 Imperial County Surface Mining and Reclamation Ordinance

As the local land use authority, Imperial County authorizes surface mining activities on unincorporated lands through the issuance of surface mining permits pursuant to Imperial County Code of Ordinances, Title 9: Land Use Code, Division 20: Surface Mining and Reclamation. The Quarry currently operates under such a county surface mining permit (CUP 08-0004), which was approved by Imperial County. This permit regulates the mining of gypsum and authorizes reclamation. Quarrying operations are vested.

The provisions of the County's Surface Mining and Reclamation Ordinance (Section 6.80 et. seq. of the County Ordinance Code) are summarized below and apply to all lands within the County, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or determination of a vested right), reclamation plan, and financial assurances for reclamation.

An objective of SMARA is to create a mineral lands inventory by designating certain areas of California as being important for the production and conservation of existing and future supplies of mineral resources. Pursuant to Section 2790 of SMARA, the State Mining and Geology Board has designated certain mineral resource areas to be of regional significance.

The project area and the Viking Ranch restoration site and Old Kane Springs Road preservation site are in areas that have not yet been mapped as part of a Mineral Land Classification study (DOC 2022). However, the Fish Creek Mountains gypsum deposit constitutes the largest reserves of this commodity in California and the Quarry is the largest gypsum quarry in the country and sole active gypsum quarry in Imperial County (Imperial County 2006). Thus, the site of the Quarry and the larger gypsum deposit are considered a locally important mineral deposit.

No locally important mineral resources are identified at either the Viking Ranch restoration site or the Old Kane Springs Road preservation site (San Diego County 2011).

4.7.2.4 San Diego County General Plan

The San Diego County General Plan was last updated in 2011 and consists of seven elements: Land Use, Mobility, Conservation and Open Space, Housing, Safety, Noise, and Environmental Justice. The following San Diego County General Plan goals and policies that pertain to land use and planning and apply to the proposed project. A project consistency analysis is provided in Table 4.7-1.

Land Use Element

Goal LU-4: Inter-jurisdictional Coordination. Coordination with the plans and activities of other agencies and tribal governments that relate to issues such as land use, community character, transportation, energy, other infrastructure, public safety, and resource conservation and management in the unincorporated County and the region.

Policy LU-4.2: Review of Impacts of Projects in Adjoining Jurisdictions. Review, comment, and coordinate when appropriate on plans, projects, and proposals of overlapping or neighboring agencies to ensure compatibility with the County's General Plan, and that adjacent communities are not adversely impacted.

Goal LU-5: Climate Change and Land Use. A land use plan and associated development techniques and patterns that reduce emissions of local greenhouse gases in accordance with state initiatives, while promoting public health.

Policy LU-5.3: Rural Land Preservation. Ensure the preservation of existing open space and rural areas (e.g., forested areas, agricultural lands, wildlife habitat and corridors, wetlands, watersheds, and groundwater recharge areas) when permitting development under the Rural and Semi Rural Land Use Designations.

Goal LU-6: Development—Environmental Balance. A built environment in balance with the natural environment, scarce resources, natural hazards, and the unique local character of individual communities.

Policy LU-6.1: Environmental Sustainability. Require the protection of intact or sensitive natural resources in support of the long-term sustainability of the natural environment.

Policy LU-6.2: Reducing Development Pressures. Assign lowest-density or lowest-intensity land use designations to areas with sensitive natural resources.

Policy LU-6.8: Oversight of Open Space. Require that open space associated with future development that is intended to be preserved in perpetuity either be: 1) Retained in private ownership of the property owner or a third party with a restrictive easement that limits use of the land as appropriate; or 2) Transferred into public ownership of an agency that manages preserved open space. The owner of the open space will be responsible for the maintenance and any necessary management unless those responsibilities are delegated through an adopted plan or agreement. Restrictive easements shall be dedicated to the County or a public agency (approved by the County) with responsibilities that correspond with the purpose of the open space. When transferred to a third party or public agency, a funding mechanism to support the future maintenance and management of the property should be established to the satisfaction of the County.

4.7.2.5 San Diego County Zoning Ordinance

The offsite mitigation properties are in San Diego County and are subject to the land use regulations of the San Diego County General Plan and San Diego County Zoning Ordinance. The Viking Ranch Restoration Site is designated Semi-Rural Residential (SR-4). The Old Kane Springs Road preservation site is designated Rural Lane (RL-30) (San Diego County 2011). Both properties are zoned by San Diego County as S92 (General Rural). This zoning designation is intended to provide approximate controls for land, which is rugged terrain, watershed, dependent on ground water for a water supply, desert, susceptible to fire and erosion, or subject to other environmental constraints (County of San Diego 2022).

4.7.2.6 Project Consistency with Local Planning Documents

See Table 4.7-1, "Project Consistency with Local Planning Documents," below for an analysis of relevant policies and their consistency with the proposed project.

Table 4.7-1
Project Consistency with Local Planning Documents

Goals/Objectives/Policies	Consistency Analysis
IMPERIAL COUNTY GENERAL PLAN AGRICULTURAL ELEMENT	
As discussed in the Initial Study prepared for the project (see SEIR Appendix A), the project site and surrounding area do not contain important agricultural soils or active agricultural operations; are not within an area zoned for agricultural use; and are not subject to a Williamson Act Contract. Therefore, the goals and policies contained in the Agricultural Element are not relevant to the proposed project and are not analyzed here for consistency.	
IMPERIAL COUNTY GENERAL PLAN CIRCULATION AND SCENIC HIGHWAYS ELEMENT	
As discussed in the Initial Study prepared for the project (see SEIR Appendix A), a portion of State Route (SR) 78 in the project area is eligible for designation as a state scenic highway. However, the project site and off-site mitigation sites are located two or more miles from SR 78 and are not visible from the highway. Therefore, the goals and policies contained in the Circulation and Scenic Highways Element are not relevant to the proposed project and are not analyzed here for consistency.	
IMPERIAL COUNTY GENERAL PLAN CONSERVATION AND OPEN SPACE ELEMENT	
Objective 1.1: Encourage uses and activities that are compatible with the fragile desert environment and foster conservation.	**Consistent.** The quarry and well site are disturbed environments, and the proposed pipeline alignment is within an existing right-of-way along the narrow-gauge railroad. The location and design of the proposed improvements were developed to avoid disturbance to sensitive environments.

Goals/Objectives/Policies	Consistency Analysis
Objective 1.4: Ensure the conservation and management of the County's natural and cultural resources.	**Consistent.** With implementation of the mitigation measures provided in the SEIR, the project would not adversely affect the natural and cultural resources of the project site and off-site mitigation sites.
Objective 1.6: Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.	**Consistent.** The project's potential effects on ecological sites are evaluated in Section 4.2, "Biological Resources," of this SEIR. With implementation of the mitigation measures provided therein, the project would have no significant adverse effects on ecological sites. The project proposes to restore and/or preserve two ecological sites, the Viking Ranch site and the Old Kane Springs Road site. As determined in Section 4.4, "Cultural Resources," with mitigation the project would have less than significant impacts on cultural resource sites. This determination is based on cultural resources reports prepared for the project by qualified archaeologists.
Objective 2.2: Develop management programs, including preservation of habitat for flat-tailed horned lizard, desert pupfish, and burrowing owl.	**Consistent.** As determined in Section 4.2, "Biological Resources," the project would have less than significant impacts on flat-tailed horned lizard, desert pupfish, and burrowing owl.
Objective 2.4: Use the CEQA and NEPA process to identify, conserve and restore sensitive vegetation and wildlife resources.	**Consistent.** The project has been reviewed pursuant to CEQA and NEPA as detailed in Section 1.0, "Introduction," of this SEIR. Potential impacts to sensitive vegetation and wildlife species are addressed in Section 4.3, "Biological Resources," of this SEIR.
Objective 2.6: Attempt to identify, reduce, and eliminate all forms of pollution; including air, noise, soil, and water.	**Consistent.** The project's air quality and water quality effects are evaluated in Section 4.1, "Air Quality," and Section 4.6, "Hydrology and Water Quality," of this SEIR. The project's noise and soil related effects were evaluated in the Initial Study (Appendix A) and determined to be less than significant. Where necessary, mitigation measures are provided to reduce potentially significant impacts to less than significant levels.
Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.	**Consistent.** As determined in Section 4.4, "Cultural Resources," (Impacts 4.4-1 and 4.4-2), the project would have less than significant impacts on historical and archaeological resources. As determined in Section 4.8, "Tribal Cultural Resources" (Impact 4.8-1), the project would have a less than significant impact on tribal cultural resources.
Objective 3.3: Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.	**Consistent.** As described in Section 4.8, "Tribal Cultural Resources," Imperial County staff notified relevant tribes of the proposed project; consultation was not requested.
Objective 4.2: Require that mineral extraction and reclamation operations be performed in a way that is compatible with surrounding land uses and minimize adverse effects on the environment.	**Consistent.** Through the NEPA and CEQA processes, the project's adverse effects on surrounding land uses and the environment have been identified and avoided or minimized through mitigation where necessary.
Objective 4.3: Safeguard the use and full development of all mineral deposits.	**Consistent.** The project would expand and modernize the Quarry allowing for its continued operation and full development of the mineral resources on the site.

Goals/Objectives/Policies	Consistency Analysis
Objective 4.5: Preserve significant geological features such as rock outcroppings, the Algodones Dunes, Imperial Sand Dunes, Salton Buttes, and Shell Beds in Yuha Basin.	**Consistent.** No significant geological features have been identified on the project site or offsite mitigation sites beyond the gypsum resource itself. Mining activities would be limited to the gypsum resource and would not affect surrounding geologic features.
Objective 5.1: Encourage the conservation and enhancement of the natural beauty of the desert and mountain landscape.	**Consistent.** As discussed in the Initial Study (Appendix A), the proposed project would not result in any new or more severe existing impacts related to aesthetics and visual resources.
Objective 6.8: Discourage the use of hazardous materials in areas of the County where significant water pollution could pose hazards to humans or biological resources.	**Consistent.** Mining and construction activities routinely involve the use and storage of hazardous substances such as fuels, oils, lubricants, and paints. The project does not propose any changes to Quarry operations and would not result in any new or more severe impacts related to hazardous materials spills or leaks. See the Initial Study prepared for the project in Appendix A for more further discussion.
Objective 6.9: Identify and protect watersheds and key recharge areas for the protection of water quality and groundwater.	**Consistent.** See Section 4.6, "Hydrology and Water Quality," of this SEIR for a detailed evaluation of the project's potential impacts to water quality and groundwater. Most drainage generated on the project site would evaporate or percolate into the ground due to the arid conditions of the region. Any runoff would continue to be directed to the Fish Creek Alluvial Fan.
Objective 6.10: Encourage water conservation and efficient water use among municipal and industrial water users, as well as reclamation and reuse of wastewater.	**Consistent.** The project would pump water from the underlying aquifer at proposed Well No. 3 for use as dust suppression within the Quarry. As determined in Section 4.6, "Hydrology and Water Quality," of this SEIR, proposed pumping would not adversely affect groundwater supplies, surface flows, or recharge. Due to the arid conditions of the project site, water reclamation and reuse is not feasible.
Objective 7.1: Ensure that all projects and facilities comply with current Federal, State, and local requirements for attainment of air quality objectives.	**Consistent.** See Section 4.1, "Air Quality," of this SEIR. The project would comply with all applicable air quality objectives.
Objective 7.4: Enforce and monitor environmental mitigation measures relating to air quality.	**Consistent.** Project mitigation measures will be compiled in a Mitigation Monitoring and Reporting Program (MMRP) that will specify the timing of implementation and responsible party to ensure mitigation is fully implemented as intended.
Objective 7.5: Coordinate efforts with Imperial County Transportation Commission (ICTC) and other appropriate agencies to reduce fugitive dust from unpaved streets.	**Consistent.** The project would allow for groundwater pumping for use as dust suppression within the Quarry including along unpaved access roads.
Objective 8.9: Conserve desert lands, within the County's jurisdiction for wildlife protection, recreation, and aesthetic purposes.	**Consistent.** When mining operations are completed, the Quarry would be reclaimed as open space providing wildlife habitat.
Biological Resource Conservation Policy 1 Provide a framework for the conservation and enhancement of natural and created open space which provides wildlife habitat values.	**Consistent.** When mining operations are completed, the Quarry would be reclaimed as open space providing wildlife habitat.
Biological Resource Conservation Policy 2 Landscaping should be required in all developments to prevent erosion on graded sites and, if the area is contiguous with undisturbed wildlife habitat, the plan should include revegetation with native plant species.	**Consistent.** When mining operations are completed, the Quarry would be reclaimed as open space including revegetation with native plant species. Restoration of the Viking Ranch site would include seeding of all graded areas with a native seed mix.

Goals/Objectives/Policies	Consistency Analysis
Cultural Resources Conservation Policy 1 Identify and document significant historic and prehistoric resources, and provide for the preservation of representative and worthy examples; and recognize the value of historic and prehistoric resources, and assess current and proposed land uses for impacts upon these resources.	**Consistent.** Historic and prehistoric resources on the project site and offsite mitigation sites are described and evaluated in SEIR Section 4.3, "Cultural Resources." None of the identified resources was determined to be significant. Implementation of Mitigation Measures 3.8-3 and 4.4-1 would ensure proper management of any cultural resources discovered during ground disturbing activities.
Mineral Resources Conservation Policy 1 Control the extraction of mineral resources in order to assure minimal disturbance to the environment, conservation of significant mineral deposits, and to protect mining operations from encroachment by incompatible land use.	**Consistent.** Quarry operations are carried out consistent with an approved mining permit and mitigation requirements resulting from the NEPA/CEQA review process. These requirements are intended to avoid or minimize environmental effects. The proposed project would not change current Quarry operations or effect adjacent land uses.
Protection of Air Quality and Addressing Climate Change Policy 1 Reduce PM_{10} and $PM_{2.5}$ emissions from unpaved roads, agricultural fields, and exposed Salton Sea lakebed.	**Consistent.** See SEIR Section 4.2, "Air Quality." The project's estimated emissions are shown in Table 4.2-4, "Jurisdictional Resources within the Old Kane Springs Road Preservation Site." As shown, the Quarry Expansion and Modernization project would not exceed ICAPCD thresholds and would be reduced compared to the emissions estimates provided in the 2008 EIR/EIS. Mitigation Measure 4.2-1a and 4.2-1b would require implementation of measures during proposed restoration activities on the Viking Ranch site to minimize air emissions such as fugitive dust, including stabilization of unpaved roads.
Open Space and Recreation Conservation Policy 1 Identification of lands appropriate for open space conservation shall be included in the development review process. The application of regulatory controls must be non-confiscatory, non-arbitrary, and reasonable. It is not the intent of any of these measures to deny any landowners the reasonable use of his land, or be considered a "taking" under the law.	**Consistent.** When mining operations are completed, the Quarry would be reclaimed and maintained as open space.
Open Space and Recreation Conservation Policy 2 The County shall participate in conducting detailed investigations into the significance, location, extent, and condition of natural resources in the County.	**Consistent.** The technical studies prepared for the project identify and determine the significance of natural resources on and adjacent the project site including biological, cultural, and water resources. The reader is referred to SEIR Appendices D-1 to D-4, E-1, H-1, and H-2.
IMPERIAL COUNTY GENERAL PLAN HOUSING ELEMENT	
The proposed project does not include any residential development and the project site and off-site mitigation sites are located in rural area away from residences. None of the goals, objectives, or policies contained in the Imperial County Housing Element apply to the proposed project and are not analyzed here for project consistency.	
IMPERIAL COUNTY GENERAL PLAN LAND USE ELEMENT	
Goal 7: Identify and protect areas of regionally-significant mineral resources which are in locations suitable for extractive uses.	**Consistent.** The Plaster City Quarry is a regionally significant mineral resource. The project would expand and modernize the Quarry allowing for its continued operation and full development of the mineral resources on the site.
Objective 7.1: Provide adequate space and land use classifications to meet current and projected economic needs for extractive activities.	**Consistent.** The project would expand and modernize the Quarry allowing for its continued operation and full development of the mineral resources on the site.
Objective 7.2: Require that extractive uses are designed and operated to avoid air and water quality degradation, including groundwater depletion, other adverse environmental impacts,	**Consistent.** Quarry operations are carried out consistent with SMARA, the County's Surface Mining Ordinance, and an approved mining permit as well as mitigation

Goals/Objectives/Policies	Consistency Analysis
and comply with the State Surface Mining and Reclamation Act and County Surface Mining Ordinance.	requirements resulting from the NEPA/CEQA review process. These requirements are intended to avoid or minimize environmental effects. See SEIR Section 4.1, "Air Quality," and 4.6, Hydrology and Water Quality, for further discussion of the project's potential impacts to air and water quality and groundwater levels and recharge potential.
Objective 9.1: Preserve as open space those lands containing watersheds, aquifer recharge areas, floodplains, important natural resources, sensitive vegetation, wildlife habitats, historic and prehistoric sites, or lands which are subject to seismic hazards and establish compatible minimum lot sizes.	**Consistent.** When mining operations are completed, the Quarry would be reclaimed and maintained as open space.
Objective 9.7: Implement a review procedure for land use planning and discretionary project review which includes the Imperial County Air Pollution Control District.	**Consistent:** The ICAPCD was provided opportunities to review and comment on the proposed project both during the initial stages of the project and through the Environmental Evaluation Committee (EEC).
IMPERIAL COUNTY GENERAL PLAN NOISE ELEMENT	
The 2008 EIR/EIS determined that all potential impacts related to noise under the USG Expansion/Modernization Project, which includes the Quarry expansion and development of Well No. 3 and the associated pipeline, would be less than significant and no mitigation was required. The Initial Study prepared for the proposed project (see SEIR Appendix A) further determined that noise impacts resulting from the proposed changes to the project would also be less than significant and no mitigation is required. The goals, objectives, and policies of the Noise Element are not relevant to the proposed project and are not analyzed for project consistency here.	
IMPERIAL COUNTY GENERAL PLAN PARKS ELEMENT	
As discussed in the Initial Study The project does not propose any new housing or employment or otherwise cause increased demand for parks. The project also does not include the development of any parks or other recreational facilities. The goals, objectives, and policies of the Parks Element are not relevant to the proposed project and are not analyzed for project consistency here.	
IMPERIAL COUNTY GENERAL PLAN RENEWABLE ENERGY AND TRANSMISSION ELEMENT	
Objective 2.1: To the extent practicable, maximize utilization of IID's transmission capacity in existing easements or rights-of-way. Encourage the location of all major transmission lines within designated corridors, easements, and rights-of-way.	**Consistent:** The proposed transmission line would not be an IID facility but would be installed within the existing right-of-way of the narrow gauge railroad.
Objective 2.2: Where practicable and cost-effective, design transmission lines to minimize impacts on agricultural, natural, and cultural resources, urban areas, military operation areas, and recreational activities.	**Consistent:** The proposed transmission line would be installed within the existing right-of-way of the narrow-gauge railroad which has been previously disturbed. As discussed throughout this SEIR development of the proposed pipeline and powerline would not significantly affect any agricultural, natural, recreational, or cultural resources. The project site is not located in an urban or military operation area.
IMPERIAL COUNTY GENERAL PLAN SEISMIC AND PUBLIC SAFETY ELEMENT	
Objective 1.1: Ensure that data on geological hazards is incorporated into the land use review process, and future development process.	**Consistent.** Geological hazards on the project site and offsite mitigation sites are addressed in the Initial Study provided as Appendix A to this SEIR. No significant impacts were identified.
Objective 1.2: Regulate development within flood-way areas in accordance with Federal Emergency Management Agency (FEMA).	**Consistent:** The project does not propose any inhabitable development.
Objective 1.4: Require, where possessing the authority, that avoidable seismic risks be avoided; and that measures, commensurate with risks, be taken to reduce injury, loss of life, destruction of property, and disruption of service.	**Consistent.** Geological hazards on the project site and offsite mitigation sites are addressed in the Initial Study provided as Appendix A to this SEIR. No significant impacts were identified.

Goals/Objectives/Policies	Consistency Analysis
Objective 1.7: Require developers to provide information related to geologic and seismic hazards when siting a proposed project.	**Consistent:** Geological hazards on the project site and offsite mitigation sites are addressed in the Initial Study provided as Appendix A to this SEIR. No significant impacts were identified.
Objective 1.8: Reduce fire hazards by the design of new developments.	**Consistent.** The project does not proposed any habitable development. Impacts related to wildfire hazards are evaluated in the project's Initial Study which is provided as Appendix A of the SEIR.
Objective 1.9: Encourage the reclamation of lands where mining, irrigation, landfills, solid waste, hazardous materials/waste storage or disposal, and natural soil erosion has occurred, so as to pose no danger to public health and safety.	**Consistent:** The project site will be reclaimed in accordance with the approved reclamation plan for the Quarry.
Objective 2.5: Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.	**Consistent:** The project would comply with all applicable state codes as described throughout SEIR Chapter 4.0.
Objective 3.2: Minimize the possibility of hazardous materials/waste spills.	**Consistent:** See SEIR Section 4.6, "Hydrology and Water Quality." Impact 4.6-1 assesses the project potential impacts to surface and groundwater quality. During restoration activities at the Viking Ranch site, BMPs would be required as part of the SWPPP prepared for the project to minimize potential water quality degradation. These measures include routinely inspecting vehicles and equipment for leaks.
IMPERIAL COUNTY SURFACE MINING AND RECLAMATION ORDINANCE (COUNTY CODE OF ORDINANCES DIVISION 20)	
Quarry operations are carried out consistent with SMARA, the Imperial County Surface Mining and Reclamation Ordinance, and an approved mining permit. Quarry operations would remain essentially unchanged with project implementation. Thus, the Quarry would continue to operate consistent with the County's Surface Mining and Reclamation Ordinance and the associated mining permit.	

4.7.3 Significance Thresholds and Analysis Methodology

4.7.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's land use impacts using the following significance criteria:

The project would normally have a significant effect on the environment if it would:

- Conflict with existing land uses;
- Conflict with adopted environmental plans and local community goals; or
- Conflict with established recreational, educational, religious or scientific uses of the area, or substantially degrade or reduce the quantity or quality of the area available for existing or future recreational opportunities.

CEQA Appendix G Thresholds of Significance

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to land use and planning if it would:

a) physically divide an established community; or

b) cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

4.7.3.2 Analysis Methodology

The project description was compared to the local governing plans that are applicable to the physical location of the project site. It was determined which policies within those plans are applicable to the project. In this case, the project is a quarry expansion, development of a well and associated pipeline, and restoration/preservation of open space. Therefore, only policies related to those proposed activities and included in the analysis.

4.7.4 Project Impacts and Mitigation Measures

4.7.4.1 2008 EIR/EIS Impact Analysis

Under the 2008 EIR/EIS, land use and planning impacts were determined to be less than significant, and no mitigation was required.

4.7.4.2 2019 SEIS Impact Analysis

Project Revisions

The proposed Quarry expansion and development of Well No. 3 and associated pipeline remain essentially unchanged and in substantively the same locations as those evaluated in the 2008 EIR/EIS. However, as a result of mitigation required in the 2008 EIR/EIS, two off-site mitigation sites have been identified and are now proposed for restoration and/or preservation as part of the project. These sites and proposed restoration activities were not evaluated in the 2008 EIR/EIS and could create a new or increased significant impact.

Changed Circumstances

As discussed previously, the overall land use conditions on and near the project site have remained essentially unchanged since publication of the 2008 EIR/EIS. There are no changed circumstances related to land use and planning.

New Information

Current regulatory requirements are addressed above. No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was certified.

Significance Determination

Based on project revisions that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.7.4.3 Subsequent Environmental Analysis

Impact 4.7-1: Physically Divide an Established Community

Overall land use patterns in the project area have not changed since completion of the 2008 EIR/EIS. There are no established communities adjacent the Quarry or the proposed locations of Well No. 3 and the associated pipeline. Continuation of Quarry operations and construction of Well No. 3 and an underground pipeline would not create a physical barrier to movement or growth. Similarly, the proposed off-site mitigation sites are not within or near an established community. No development is proposed on either site. Therefore, the proposed project would have no potential to physically divide an established community.

Level of Significance: No impact.

Mitigation Measure: None required.

Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations

The proposed project would not conflict with applicable land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect.

Conflicts between a project and applicable land use policies do not constitute significant physical environmental impacts in and of themselves. A policy inconsistency is considered a significant adverse environmental impact only when it is related to a policy adopted for the purpose of avoiding or mitigating an environmental effect, and if it is anticipated that the inconsistency would result in a significant adverse physical impact based on established significance criteria.

Expansion of the Quarry and development of Well No. 3 and associated pipeline would be consistent with the existing Imperial County General Plan land use designations for the site. Furthermore, as demonstrated in Table 4.7-1, the project would not substantially conflict with any applicable land use policies adopted by Imperial County or San Diego County for the purpose of avoiding or mitigating environmental effects. As a result, no significant land use impacts related to the project’s consistency with land use policies would occur. Therefore, this impact would be less than significant.

Level of Significance: Less than significant.

Mitigation Measure: None required.

SECTION 4.8:
TRIBAL CULTURAL RESOURCES

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SECTION 4.8:
TRIBAL CULTURAL RESOURCES

This section of the draft subsequent environmental impact report (Draft SEIR) describes the tribal cultural resources (TCRs) at the project site and off-site mitigation sites, presents the regulatory framework within which TCRs are evaluated, and analyzes the potential impacts to TCRs that could occur as a result of the proposed changes to the project. Cultural resources are addressed in greater detail in Section 4.3, "Cultural Resources."

The information in this section is based primarily on County correspondence with pertinent tribes per the AB 52 tribal notification process as well as the cultural resources report (2018 CRR) prepared for the US Gypsum Company Expansion/Modernization Project (Pacific Legacy, Inc. 2018) (Appendix E, "Cultural Resources Report"). The 2018 CRR investigates an Area of Potential Effect (APE) that encompasses both the project site (Quarry, Well No. 3 site, pipeline alignment) and an area to the south where a waterline replacement project has been completed. The following discussion summarizes information and findings from the 2018 CRR that pertain only to the project site.

4.8.1 Environmental Setting

This section summarizes the available information regarding TCRs on and in the vicinity of the project site including descriptions of the ethnography of the project area and the results of the tribal notification process completed for the 2008 EIR/EIS.

4.8.1.1 Tribal Cultural Resources Conditions at the Time of the 2008 EIR/EIS

Tribal Cultural Resources are defined as site features, places, cultural landscapes, and sacred places or objects that are of cultural value to a tribe and are either on or are eligible for listing on the California Historic Register or a local historic register. Tribal Cultural Resources were added as a resource category to the CEQA Guidelines Appendix G Environmental Checklist in 2016 per Assembly Bill 52 (AB 52). Thus, Tribal Cultural Resources were not explicitly addressed in the 2008 EIR/EIS. The 2002 CRR did; however, provide a description of the ethnography of the project area and include a summary of the County's tribal notification efforts for the project.

Ethnography

According to the 2002 CCR, Kumeyaay inhabit the area currently encompassed by western Imperial County, and comprise groups formerly identified as Tipai and Ipai (Carrico 1983; Cline 1979; Hedges 1975; Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991, cited in Paleo Solutions 2018). Kumeyaay territory extends east nearly to Yuma, AZ, southwest to Todos Santos Bay, west to the Pacific Ocean, and northwest to the San Luis Rey River and San Felipe Creek. Quechan and Cahuilla border Kumeyaay territory to the east and north, respectively. Kumeyaay language, formerly called Diegueño, is part of the Hokan stock of the Yuman language family (Langdon 1990, cited in Paleo Solutions 2018). Kumeyaay were organized into autonomous tribelets under the control of a chief (kwaaypaay) who had at least one assistant (Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991, cited in Paleo Solutions 2018). The position of chief was inherited from father to eldest son. The chief directed ceremonies and resolved differences within the group. Kroeber (1925:712, cited in Paleo Solutions 2018) suggests that Tipai and Ipai populations numbered approximately 3,000 at the time of contact, circa 1770–1790. Subsequent to contact, the Native American population decreased, and in 1821 Mission San Diego records document a population of 1,711, which would have included Kumeyaay (Luomala 1978, cited in Paleo Solutions 2018). Kumeyaay relied heavily on seasonally available vegetal foods on valley floors and in the foothills and mountains (Ladastida and Caldeira 1995, cited in Paleo Solutions 2018). In the spring, blossoms and buds were collected from blooming plants in the foothills. During the summer, cactus fruits, agave, and mesquite pods were collected in valleys. Small animals were hunted during both seasons. During the fall and winter months, Kumeyaay moved into the mountains seeking shelter and food. Rockshelters and overhangs provided shelter from winter rain and snow, and acorns, pinyon nuts, and small game provided food. Kumeyaay material culture includes: seed processing implements such as the mortar and pestle and milling stones; baskets which were used for seed winnowing and storage; plain and decorated reddish-brown ceramic vessels were used for both cooking and storing water; and the bow and arrow (Ladastida and Caldeira 1995, cited in Paleo Solutions 2018). Structures built by the Kumeyaay varied in form depending on the season. For example, summer residential structures often consisted only of a windbreak while winter residential structures were semi-subterranean pit houses with a with-tie pole framework and brush thatch. Kumeyaay also built ceremonial structures, such as rock-supported brush fence circles, for events such as harvest dances (Luomala 1978 and Shipek 1991, cited in Paleo Solutions 2018). Kumeyaay primarily interacted and traded among themselves but did involve neighboring groups in certain trading activities. For example, coastal groups traded salt, dried seafood, and abalone shells with interior valley groups for gourds, acorns, agave, and mesquite pods. Kumeyaay also traded for granite to manufacture mortar and pestles, and Quechans traded with the Kumeyaay for acorns and acorn flour (Luomala 1978 and Shipek 1991, cited in Paleo Solutions 2018).

Tribal Consultation

A sacred lands search was conducted as part of the 2002 CRR. A list of Native American contacts for the project area was obtained from the Native American Heritage Commission. The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the project site. All groups and/or individuals on the list provided by the Native American Heritage Commission were contacted regarding the 2008 EIR/EIS but consultation was not requested.

4.8.1.2 Cultural Resources Conditions at Present

The following discussion is based primarily on the *Cultural Resources Report for the US Gypsum Company Expansion/Modernization Project Supplemental EIS, Imperial, California* prepared by Pacific Legacy, Inc. in 2018 (2018 CRR) (see Appendix E).

Ethnography

No changes have occurred, and no new information has become available regarding the ethnography of the project area since the 2008 EIR/EIS.

Tribal Consultation

NEPA does not require tribal notification or consultation; thus, no further correspondence with tribes occurred as part of the 2019 SEIS.

Viking Ranch Restoration Site

A records search for potential cultural resources was conducted by Dudek archeologists for the Viking Ranch Restoration Site. No cultural resources have been recorded on the site or within a 1-mile buffer area (Dudek 2021).

Old Kane Springs Road Preservation Site

The Old Kane Springs Road Preservation Site is undeveloped open space with no structures or other improvements.

4.8.2 Regulatory Setting

The following sections discuss federal, State, and local regulations pertaining to biological resources that warrant consideration during the environmental review of the project.

4.8.2.1 Federal

There are no applicable federal programs or policies related to TCRs.

4.8.2.2 State

Assembly Bill 52

Assembly Bill (AB) 52 specifies that a project that may cause a substantial adverse change in the significance of a TCR, as defined, is a project that may have a significant effect on the environment. AB 52 requires a lead agency to consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project, if the tribe: (1) requests in writing consultation to the lead agency, (2) to be informed by the lead agency of proposed projects in that geographic area and the tribe requests consultation, prior to determining whether a negative declaration, mitigated negative declaration, or EIR is required for a project pursuant to CEQA. AB 52 specifies examples of mitigation measures that may be considered to avoid or minimize impacts on TCRs.

California Public Resources Code (PRC) Section 21080.3.1 requires that prior to the release of a negative declaration, mitigated negative declaration, or EIR for a project, the lead agency shall begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project if:

- The California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification of proposed projects in the geographic area that is traditionally and culturally affiliated with the tribe, and
- The California Native American tribe responds, in writing, within 30 days of receipt of the formal notification, and requests the consultation.

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to PRC Section 21080.3.1.

These requirements do not apply to subsequent or supplement EIRs.

4.8.2.3 Local

Imperial County General Plan

The goals, objectives, and policies in the *Imperial County General Plan* are intended to inform decision makers, the general public, public agencies, and those doing business in the County of the County's position on land use-related issues and to provide guidance for day-to-day decision-making. The following objectives and policies contained within the *Imperial County General Plan Conservation Element* pertains to cultural resources for the proposed project:

Conservation and Open Space Element

Goal 3: Preserve the spiritual and cultural heritage of the diverse communities of Imperial County.

Objective 3.1: Protect and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

Objective 3.3: Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.

Imperial County Surface Mining Ordinance

The Imperial County Surface Mining Ordinance was enacted to ensure the continued availability of important mineral resources, while regulating surface mining operations as required by SMARA, PRC Section 2207, and state regulations for surface mining and reclamation practice (California Code of Regulations [CCR], Title 14, Division 2, Chapter 8, Subchapter 1, Sections 3500 et seq.), to ensure prevention or mitigation of adverse effects on the environment, including damage to archaeological and historical resources.

San Diego County General Plan

The goals and policies of the *San Diego County General Plan* provide direction to future growth and development in the county. The following goals and policies from the *San Diego County General Plan Conservation Element* relate to tribal cultural resources and apply to proposed actions at the Viking Ranch Restoration Site and Old Kane Springs Road Preservation Site, located in unincorporated San Diego County.

Conservation and Open Space Element

Goal 3: Preserve the spiritual and cultural heritage of the diverse communities of Imperial County.

Goal COS-7: Protection and Preservation of Archaeological Resources. Protection and preservation of the County's important archeological resources for their cultural importance to local communities, as well as their research and educational potential.

Policy COS-7.1: Archaeological Protection. Preserve important archaeological resources from loss or destruction and require development to include appropriate mitigation to protect the quality and integrity of these resources.

Policy COS-7.2: Open Space Easements. Require development to avoid archeological resources whenever possible. If complete avoidance is not possible, require development to fully mitigate impacts to archaeological resources.

Policy COS-7.3: Archaeological Collections. Require the appropriate treatment and preservation of archaeological collections in a culturally appropriate manner.

Policy COS-7.4: Consultation with Affected Communities. Require consultation with affected communities, including local tribes to determine the appropriate treatment of cultural resources.

Policy COS-7.5: Treatment of Human Remains. Require human remains be treated with the utmost dignity and respect and that the disposition and handling of human remains will be done in consultation with the Most Likely Descendant (MLD) and under the requirements of Federal, State and County Regulations.

4.8.3 Significance Criteria and Analysis Methodology

4.8.3.1 Significance Criteria

2008 EIR/EIS Significance Criteria

The 2008 EIR/EIS evaluated the project's cultural resources impacts using the following significance criteria:

The project would be considered to have a significant effect on cultural resources if it would:

- Disturb cultural resources that are either listed or eligible to be listed in the NRHP; as registered or eligible to be registered as a state Historic Landmark; or included in any responsible local inventory of historical properties;
- Disturb previously unknown important archaeological or historical resources;
- Have the potential to cause physical change which would affect unique ethnic cultural values; or
- Restrict existing religious or sacred uses within the potential impact area.

CEQA Appendix G Significance Criteria

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to cultural resources if it would:

a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5;
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5;
c) Disturb any human remains, including those interred outside of dedicated cemeteries.

4.8.3.2 Analysis Methodology

The evaluation of potential impacts to cultural resources is based on the findings of the 2018 CRR (Appendix E). Through a combination of a comprehensive records search for previously identified cultural resources and a field investigation to identify and record newly discovered resources the 2018 CRR confirmed the location of significant cultural resources within the APE for the project. Based on this information, the proposed locations of project activities were compared to determine potential impacts to resources.

4.8.4 Project Impacts and Mitigation Measures

4.8.4.1 2008 EIR/EIS Impact Analysis

The 2008 EIR/EIS determined that impacts to known prehistoric and historic resources within the USG Expansion/Modernization Project area would be less than significant. However, it was noted that excavation in previously undisturbed areas could uncover unknown resources. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to unknown cultural resources:

> ***Mitigation Measure 3.8-3:*** *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented.*

4.8.4.2 2019 SEIS Impact Analysis

The 2019 SEIS further evaluated the proposed project under the National Environmental Policy Act (NEPA) and provided the following additional mitigation to address the potential for inadvertent discovery of buried artifacts which may be considered significant tribal cultural resources:

> ***Mitigation Measure 3.6-1:*** *Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.*
>
> ***Mitigation Measure 3.6-2:*** *Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way. A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.*

4.8.4.3 Substantial Project Changes

Project Revisions

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to cultural resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances

No changed circumstances related to the project would create a new or increased significant impact related to cultural resources.

New Information

The BLM requires that areas not subject to cultural resources inventory survey for over 10 years must be re-examined. Therefore, areas that were investigated for the USG Expansion/Modernization Project in 2002 were again inventoried in 2018. An updated Cultural Resources Report (2018 CRR) was completed as part of the 2019 SEIS. The 2018 CRR included an archival and records search and a pedestrian inventory of the USG Expansion/Modernization Project APE. As a result of the pedestrian survey, 18 cultural resources were newly discovered including one archaeological site and 17 isolated finds within the Quarry and one prehistoric archaeological site and three isolated finds within the well site and associated pipeline alignment.

Due to the identification of newly discovered cultural resources within the project site, the 2019 SEIS recommended implementation of mitigation measures 3.6-1 and 3.6-2 to address the potential for inadvertent discovery of buried resources.

Significance Determination

Based on project revisions that may create a new or increased significant impact, the County has amplified and augmented the analysis contained in the 2008 EIR/EIS. This evaluation is provided in the following impact analysis.

4.8.4.4 Subsequent Environmental Analysis

Impact 4.8-1: Would the Project Adversely Affect the Significance of a Tribal Cultural Resources, As Defined in PRC § 21074

Quarry, Well No. 3, and Associated Pipeline

As discussed in Section 4.3, the 2002 CRR and 2018 CRR concluded that, with mitigation, the project would not result in any significant impacts to archeological sites. As discussed in greater detail in Impact 4.3-1, the two prehistoric archaeological sites (PLI-2018-1 and PLI-2018-2) identified in the APE would not be disturbed by project activities due to their locations away from active mining and proposed construction. Numerous isolated cultural resources were also identified within the APE; however, isolated finds are not eligible for listing in the NRHP and were not evaluated further. Furthermore, the tribal notification process completed for the project failed to identify any tribal cultural resources in the project area. As there are no known Tribal Cultural Resources within the APE, the project would have a less than significant impact and no mitigation is required. However, implementation of the existing mitigation measures listed below would further reduce the potential to disturb significant tribal cultural resources by requiring construction monitoring, work to halt in the event of a find and, requiring proper treatment of discovered resources.

Level of Significance Before to Mitigation: Less than significant

Mitigation Measures: *Implement the following existing mitigation measures:*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.8-3*
- *2019 SEIS:*
  - *Mitigation Measure 3.6-1*
  - *Mitigation Measure 3.6-2*

Level of Significance After Mitigation: Less than significant

Viking Ranch Restoration Sites

Implementation of Mitigation Measures 4.3-1 and 4.3-2 would reduce potential impacts to TCRs by requiring construction monitoring, requiring work to halt in the event of a find and, proper treatment of discovered resources. Mitigation Measure 4.3-2 requires work to halt in the event human remains are discovered and requires the remains to be properly treated in consultation with the most likely descendent (MLD) and in accordance with federal, state, and local laws. Therefore, this impact would be less than significant with mitigation.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measures: *Implement Mitigation Measures 4.3-1 and 4.3-2.*

Level of Significance After Mitigation: Less than significant.

Old Kane Springs Road Preservation Site

No ground disturbing activities or development are proposed at the Old Kane Springs Road Preservation Site. Therefore, there would be no potential to adversely affect Tribal Cultural Resources at this site.

Level of Significant: No impact

Mitigation Measures: None required.

CHAPTER 5:
CUMULATIVE IMPACTS

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CHAPTER 5:
CUMULATIVE IMPACTS

CEQA Guidelines Section 15130 requires that an Environmental Impact Report (EIR) discuss cumulative impacts of a project and determine whether the project's incremental effect is "cumulatively considerable." The definition of cumulatively considerable is provided in Section 15065(a)(3):

"Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. According to Section 15130(b) of the CEQA Guidelines:

[t]he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.

For purposes of this Subsequent EIR (SEIR), the project would have a significant cumulative effect if:

- the cumulative effects of other past, current, and probable future projects without the project are not significant and the project's incremental impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or
- the cumulative effects of other past, current, and probable future projects without the project are already significant and the project contributes measurably to the effect. The standards used herein to determine measurability are that either the impact must be noticeable or must exceed an established threshold of significance.

This SEIR identifies potentially significant environmental impacts associated with implementation of the proposed project, which are addressed by resource topic in Chapter 4, "Environmental Analysis." These issues, and others that could be cumulatively considerable significant effects, are discussed below in the context of cumulative development.

5.1 GEOGRAPHIC SCOPE AND TEMPORAL SCOPE

The geographic area that could be affected by the proposed project varies depending on the type of environmental resource being considered. When the effects of the project are considered in combination with those other past, present, and reasonably foreseeable future projects to identify cumulative impacts, the other projects that are considered may also vary depending on the type of environmental effects being assessed. The general geographic area associated with different environmental effects of the project defines the boundaries of the area used for compiling the list of projects considered in the cumulative impact analysis. For example, the analysis of some air quality impacts is based on regional-scale growth; thus, a regional perspective must be used to assess cumulative air quality impacts. In the case of land use impacts, given the localized impact area of concern, a smaller more localized area surrounding the immediate project area, would be appropriate for consideration. Table 5-1, "Geographic Scope of

Cumulative Impacts," presents the geographic scales associated with the different resources addressed in this SEIR analysis.

Table 5-1
Geographic Scope of Cumulative Impacts

Resource Issue	Geographic Scale of Impacts
Air Quality	Local (carbon monoxide, particulate matter, air toxics) Air basin/regional (ozone, particulate matter, and other criteria pollutants)
Biological Resources	Local and areas within the same watershed
Cultural Resources	Local
Greenhouse Gas Emissions	Global (greenhouse gases)
Geology, Soils and Paleontological Resources	Local
Hydrology and Water Quality	Local, upstream, and downstream areas within the same watershed and aquifer
Land Use and Planning	Local
Tribal Cultural Resources	Local

Source: Data compiled by Benchmark Resources in 2022

5.2 RELATED PROJECTS

5.2.1 Analysis Method

The CEQA Guidelines allow for the use of two methods to determine the scope of related projects for the cumulative impact analysis (CEQA Guidelines Section 15130):

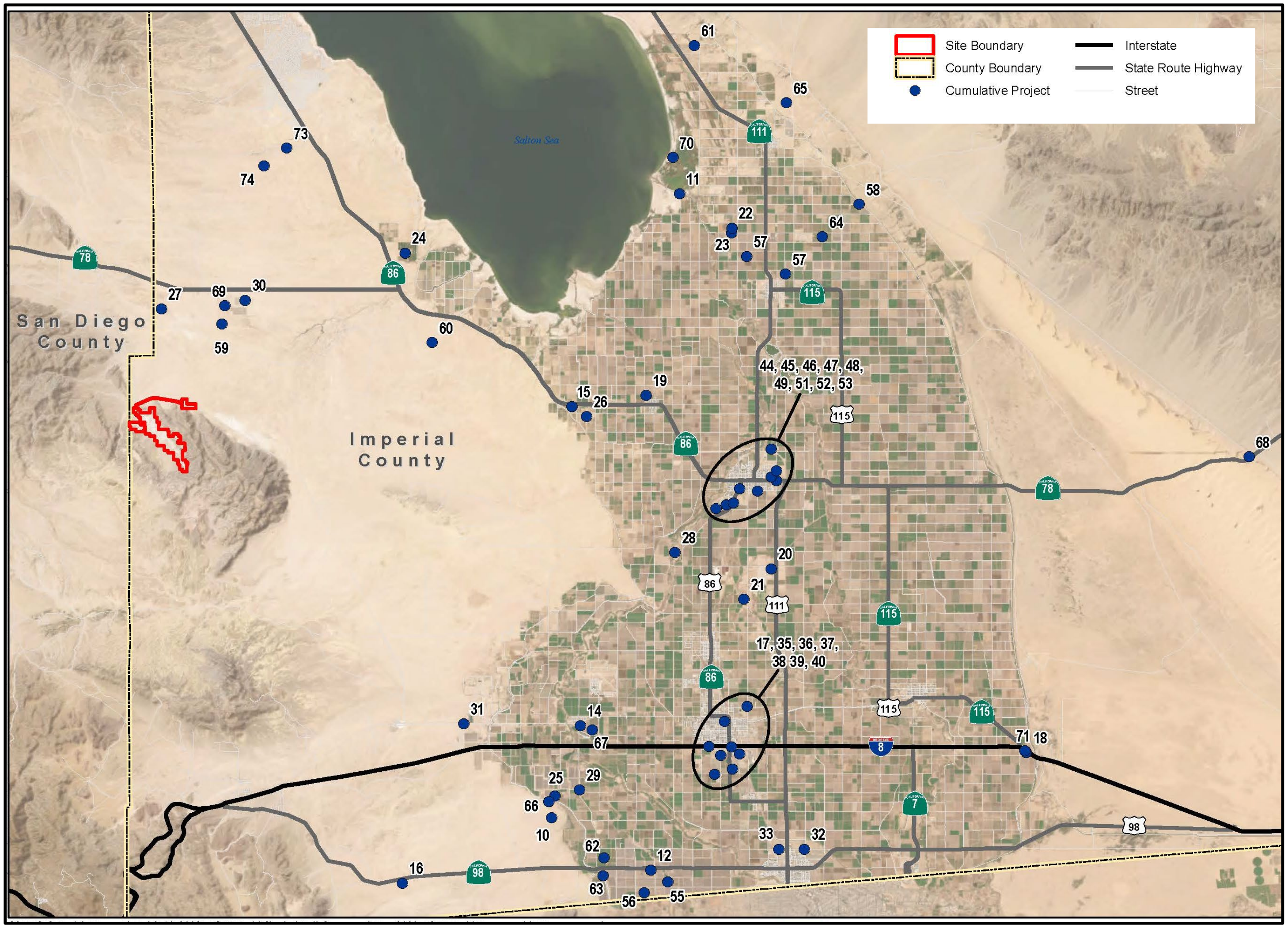
List Method: A list of past, present, and reasonably anticipated future projects producing related or cumulative impacts, including those projects outside the control of the agency.

Regional Growth Projections Method: A summary of projections contained in an adopted general plan or related planning document that is designed to evaluate regional or areawide conditions.

For the purpose of this SEIR, the list approach is used because of the localized nature and specific land use of the proposed project. This method allows for a project-based cumulative analysis within the defined geographic area of the proposed project.

5.2.2 List of Nearby Projects

Table 5-2 below provides a comprehensive list of all present and foreseeable projects that could contribute to a cumulative impact on the environment. Projects listed include those located on both public and private land and those identified by the BLM, Imperial County, and the cities of El Centro, Imperial, and Brawley. Table 5-2 presents the project name, location, type, status, total acres, and a brief description of each project, to the extent available. Most of the projects listed in Table 5-2 have been, are being, or would be required to undergo their own independent environmental review under NEPA and/or CEQA, as applicable. Figure 5-1, "Approximate Location of Cumulative Projects," shows the location of each of the projects listed in Table 5-2 using a corresponding identification number. Also shown on this figure, are regulatory boundaries applicable to the preceding analysis such as the critical habitat for Peninsular bighorn sheep (PBS).



SOURCE: Aerial–Maxar (dated 2-10-2022); ESRI World Shaded Relief accessed Ma y 2023, ESRI World Topographic Map accessed 2023; ESRI World Streetmap, 2009; Adapted by Benchmark Resources in 2023

NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 5-1
Approximate Location of Cumulative Projects

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5.3 CUMULATIVE IMPACTS EVALUATION

Each resource section below provides a summary listing the impacts identified in each resource section (Sections 4.1 through 4.8) and is followed by a discussion of the potential for these project impacts to contribute to cumulative impacts.

5.3.1 Air Quality

Project impacts pertaining to air quality, as described in Section 4.1, are as follows:

- Impact 4.1-1: Conflict with or obstruct implementation of the applicable air quality plan (Less than Significant).
- Impact 4.1-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (Less than Significant).
- Impact 4.1-3: Expose sensitive receptors to substantial pollutant concentrations (Less than Significant).
- Impact 4.1-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people (Less than Significant).

Cumulative effects on air quality would occur if the proposed project, combined with the reasonably foreseeable projects identified in Table 5-2, would affect the resource even where the proposed project alone would not. Section 4.1 of this SEIR discussed cumulative air quality impacts from the proposed project and other development activities in the area affected by the proposed project.

Impact 4.1-2 determined that air quality emissions would not exceed the applicable significance thresholds of either the Imperial County Air Pollution Control District (ICAPCD), San Diego Air Pollution Control District (SDAPCD), or the CEQA Guidelines. Impact 4.1-1 further determined that the project would be consistent with all applicable air quality plans. If a project's emissions are below adopted significant thresholds and the project is consistent with the air quality plans it is assumed that it would not directly or cumulatively cause, contribute, or worsen violations to the region's air quality standards. Thus, the project's contribution to cumulative air quality impacts would be less than significant and less than cumulatively considerable.

Table 5-2
List of Nearby Projects

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
1	SDG&E Switchyard from Ocotillo Express Modification	Security improvement modifications for Ocotillo Switchyard	N/A	BLM	Completed
2	Ocotillo Wind Energy Facility	Operating and maintaining a 265.44-megawatt (MW) wind generation facility	12,406 acres	BLM	Notice of Availability of the Record of Decision published in the Federal Register 5/11/12
3	Granite/IVA ROW Assignment	Assignment of 3 rights-of-way from Granite Construction Inc. to Imperial Valley Aggregates, LLC	12.9 acres	BLM	Completed
4	Imperial Solar Energy Center (CSolar) West	30 kV line will cross BLM land and interconnect with the Imperial Valley Substation	1,130 acres	BLM	Approved on August 23, 2011
5	Campo Verde Solar Gen-tie	230 kV line crossing 1 mile of BLM land and interconnecting with the Imperial Valley Substation	17 acres	BLM	Secretary Salazar approved transmission line on 9/26/2012
6	Ormesa, LLC	Geothermal sundry notice for installation of a metal shade at Ormesa II	N/A	BLM	Preparation and planning
7	Centinela Solar Energy	230 kV line will cross BLM land and interconnect with the Imperial Valley Substation	N/A	BLM	BLM approval on December 29, 2011
8	Imperial Solar Energy Center (CSolar) South Gen-tie	230 kV line crossed BLM land and interconnected with the Imperial Valley Substation	947 acres	BLM	Approved on July 14, 2011
9	Proposed RV Park Acquisition	CDPR evaluating effects of acquiring 57-acre RV park adjacent to Ocotillo Wells SVRA	57 acres	California Department of Parks and Recreation	Notice of Determination filed December 2107
10	Sunrise Powerlink Project	500 kV transmission line from Imperial Valley Substation to new substation southeast of Alpine, continuing to Sycamore Canyon Substation	2,83 acres	California Public Utilities Commission	Notice of Determination filed November 2016
11	Red Hill Bay Wetland Restoration Project	A series of constructed ow earthen berms to create water impoundments in two large cells	37,660 acres	Imperial Irrigation District	Notice of Determination filed February 2018
12	Wistaria Ranch Solar Energy Center	250 MW solar project separated into 16 individual farms/projects producing approximately 20 MW each	2,661 acres	Imperial County	Final EIR completed December 2014
13	Iris Cluster Solar Farm	Four proposed solar farms, Ferrell, Rockwood, Iris and Lyons Solar Farm located in Imperial County	1,400 acres	Imperial County	Final EIR completed January 2015

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
14	Verizon Wireless Cell Tower	Installation of 100-foot wireless telecommunication facility with equipment shed and generator	N/A	Imperial County	Notice of Determination filed March 2015
16	Vista Verizon Tower	Installation of 110-foot wireless telecommunication facility with equipment shed and generator	N/A	Imperial County	Notice of Determination filed November 2015
17	ClearTalk Tower	Installation of 160-foot wireless telecommunication facility	N/A	Imperial County	Mitigated Negative Declaration
18	American Tower	Renewal of land use entitlements for cell tower. No physical alterations to occur.	N/A	Imperial County	Notice of Determination filed December 2015
19	Valencia I Solar Project	3 MW solar project	A portion of a 17-acre site	Imperial County	Notice of Determination file December 2015
20	Valencia 2 Solar Project	3 MW solar project	17 acres	Imperial County	Notice of Determination filed December 2015
21	Valencia 3 Solar Project	3 MW solar project	19 acres of a 40-acre parcel	Imperial County	Notice of Determination filed December 2015
22	Weist John and Theresa Solar 50 MW	N/A	N/A	Imperial County	N/A
23	Weist John and Theresa Solar 50 MW	N/A	N/A	Imperial County	N/A
24	Cell Tower Three Flags Citrus-American Tower	Renew entitlements of previously approved CUP for existing 300-foot Rohn Tower	N/A	Imperial County	Notice of Exemption filed in January 2016
25	Big Rock Solar	325 MW cluster solar project made up of Big Rock, Laurel 1, Laurel 2 and Laurel 3 solar farms	1,380 acres	Imperial County	Notice of Availability filed April 2018
26	Elmore Stephen (Cell Tower)	N/A	N/A	Imperial County	N/A
27	Solano Energy Farms	Reactivation of 3 existing groundwater wells totaling 3,200 acre-feet of water for irrigation of agricultural crops	N/A	Imperial County	Approved by Planning Commission February 2017
28	G2 BIO, LCC Picacho Gold Recovery	Leach approximately 90,000 ounces of gold and/or silver from Heap 5 of reclaimed Picacho Gold Mine	N/A	Imperial County	Notice of Determination filed September 2014
29	Vega SES Solar Project	100-MW photovoltaic solar energy facility with an integrated 100 MW battery storage system	574 acres	Imperial County	Notice of Determination filed September 2017
30	Seville 4 Solar Project	20 MW solar project and construction of 12.5 kV or 34.5 kV gen-tie line	175 acres	Imperial County	Notice of Preparation August 2017

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
31	SEPV Dixieland East and West Solar Project	Development of a 3 MW photovoltaic solar energy generating facility	32 acres	Imperial County	Notice of Determination September 2015
32	El Portal Subdivision	Subdivision including 627 single-family homes and two parks	156.38 acres	City of Calexico	Notice of Preparation January 2018
33	Trinity Cultivation and Manufacturing Facility	Construction of three buildings for cultivation and manufacturing	8.23	City of Calexico	Notice of Preparation December 2017
34	No. 11-18 Southern Sewer Pump Station	Construction of approximately 18,865 lineal feet of sewer pipeline and a new sewer pump station	0.25 acres	City of Calexico	Mitigated Negative Declaration
35	Lotus Ranch	609 single-family homes, 10.8-acre park, 16.5 acres of detention basin, and an 8-acre school site	213 acres	City of El Centro	Pending establishment of Lighting Landscaping Maintenance District
36	Citrus Grove Estates	120 single family lots & 2.23-acre park	47 acres	City of El Centro	Pending on the applicant to select a consultant
38	Imperial County Office of Education	Annexation and subdivision to create four parcels	80 acres	City of El Centro	Environmental study in progress
39	PI Tower Development	Construction of a 90-foot wireless communications tower facility	N/A	City of El Centro	Pending submittal of photo simulations
40	Numa Incorporated	Two restaurants and banquet rooms	N/A	City of El Centro	Scheduled for Planning Commission
41	Adams Park	Subdivision of 20.21 acres for 240 apartments	21.21 acres	City of Brawley	Final map submitted
42	Florentine (Springhouse)	160 condominiums	17.67 acres	City of Brawley	Construction underway; extension for south part of project
43	Latigo Ranch	Construction of 267 single-family lots	83.42 acres	City of Brawley	Partially completed; on hold by developer
44	Luckey Ranch Planned Development	Construction of 803 units	146 acres	City of Brawley	Partial construction completed
45	Malan Park	Construction of 223 single-family lots	63.34 acres	City of Brawley	Partial construction completed
46	Rancho Porter	Planned development of 1,266 residential units, commercial units, and open spaces	210.43 acres	City of Brawley	Annexation completed
47	Silver Oaks	Planned development of 256 condominiums	14.71 acres	City of Brawley	On hold by developer
48	Tangerine Gardens South	Construction of 140 condominiums	N/A	City of Brawley	On hold by developer
49	Brawley Elementary School District	Construction of 84,400 square-foot middle school	20 acres	City of Brawley	On hold by developer
53	Gateway Planned Development	Planned development of 124 single family and 240 multi-family units	107.97 acres	City of Brawley	Partial construction completed

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
54	La Paloma Planned Development	Planned development of 1,430 single-family units	70 acres	City of Brawley	Partial construction completed
55	Calexico I-A	100 MW PV solar facility and supporting structures	666 acres	Imperial County	Under construction
56	Calexico I-B	100 MW PV solar facility and supporting structures	666 acres	Imperial County	Under construction
57	Cluster I Solar (Calipatria, Wilkinsonm Lindsey, Midway I, Midway II, Midway III, Midway IV)	Three (3) PV solar farms generating up to 255 MW	1,731 acres	Imperial County	Portions are operational, portions are pending construction, and portions are under construction
58	Citizens Imperial Solar Project	A 30 MW PV solar facility and supporting structures	223 acres	Imperial County	Operational
59	Seville Solar Farm Complex (I, II, III, 4, and 5)	Five (5) PV solar projects generating 135 MW	1,238 acres	Imperial County	Portions are operational, portions are under construction
60	Desert Valley Company Monofill – Cell 3 Closure	Installation of Cell 3 Final Cover; continued leachate monitoring and collection; continued sampling of groundwater monitoring wells; installation and monitoring of vents for radon gas; inspections of the final cover, dikes, drainage systems, leachate system, leak detection, access road, landfill structures are site security; and implementation of corrective actions, as necessary.		Imperial County	Anticipated to commence 2025
61	Chocolate Mountain Solar Farm	50 MW PV solar facility and supporting structures on approximately 320 acres		Imperial County	Pending Construction
62	Drew Solar, Inc.	100 MW PV solar facility and supporting structures	808 acres	Imperial County	Under construction
63	Le Conte Energy Storage System	Battery energy storage system with up to 125 MW of electric storage capacity		Imperial County	Pending construction
64	Nider Solar Project	100 MW PV solar facility and supporting structures.	320 acres	Imperial County	Pending entitlement (on hold)
65	Ormat Wister Solar	A 20 MW PV solar facility	100 acres	Imperial County	Under construction
66	CED Westside Canal Battery Storage	Battery energy storage system with up to 2,025 MW of electric storage capacity.		Imperial County	Pending entitlement
67	Coyne Ranch Specific Pan	Residential project with up to 5,446 residential units		Imperial County	In process

Figure 5-1 Map Key	Project Name	Description of Project	Size or Extent	Jurisdiction/ Landowner	Status
68	Glamis Specific Plan	General Plan Amendment and Specific Plan for the Glamis Specific Plan Area		Imperial County	Application submitted; EIR in progress
69	Desert Highway Farms	Cannabis cultivation	320 acres	Imperial County	Approved; EIR in progress
70	Hell's Kitchen Geothermal Exploration Project	Construction, operations and testing of geothermal exploration wells.		Imperial County	In process
71	Strategic Transmission Expansion Plan	A multi-regional strategic transmission expansion plan which includes: • New double circuit 230 kV collector system, connecting six substations; • Two new substations; • New 1,500-kV AC line to connect Arizona Public Service's North Gila substation to IID's Highline substation; and, • A new 500 kV DC transmission line from the Salton Sea area to the San Onofre Nuclear Generating Station substation.		Imperial County	Plan approved
72	ALTiS Plant	Construction and operation of plant using brine from Hudson Ranch Power I Geothermal Plant to produce lithium hydroxide, zinc and manganese products. Facilities		Imperial Irrigation District	Pending entitlement
73	Truckhaven Exploratory Well Drilling	Drilling of four geothermal exploratory wells within Truckhaven Geothermal Leasing Area.		BLM	Approved
74	Truckhaven Seismic Exploration	Orni 5, LLC proposes to conduct a three dimensional (3D) seismic survey to evaluate the geology of the Truckhaven Geothermal Leasing area.		BLM	Approved

Source: BLM 2019

5.3.2 Biological Resources

Project Impacts

Project impacts pertaining to biological resources, as described in Section 4.2, are as follows:

- Impact 4.2-1: The project could have substantial adverse effects on special-status plant species or plant communities (Less than significant with mitigation).
- Impact 4.2-2: The project could have substantial adverse effects on special-status wildlife species (Less than significant with mitigation).
- Impact 4.2-3: The project could have substantial adverse effects on state or federally protected wetlands (Less than significant with mitigation).
- Impact 4.2-4: The project would not interfere substantially with native wildlife movement or impede nursery site use (Less than significant with mitigation).
- Impact 4.2-5: The project would not conflict with any local policies or ordinances protecting biological resources or with any adopted habitat conservation plan or natural community conservation plan (Less than significant with mitigation).

Geographic Scope

The geographic scope of the cumulative effects analysis is based on the vegetation, habitat, and land uses at the project site, the surrounding geography, and the characteristics of potential affected biological resources. The project site is located within and adjacent to federal, state, and county lands that are largely undeveloped, except in the Imperial Valley where agriculture is dominant. These undeveloped lands support native vegetation and habitat primarily of desert shrublands, and desert transitional montane habitats such as semi-desert chaparral and conifer woodlands at higher elevations.

The geographic extent for the analysis of cumulative effects to biological resources is as follows:

- Vegetation, wildlife habitat, special-status plants, common wildlife, and wide-ranging special status wildlife: a 20-mile radius surrounding the project site.
- *Peninsular bighorn sheep:* The designated critical habitat and recovery regions within San Diego and Imperial counties, as identified by USFWS.
- *Desert pupfish:* The watershed supporting the USFWS-designated critical habitat within Imperial County, as identified by USFWS.
- *Flat-tailed horned lizard:* Western population as identified by USFWS.
- *Burrowing owl:* The geographic extent of burrowing owls in western Imperial County (including the lands west of the Salton Sea and the Imperial Valley)

Cumulative Impact Analysis

Vegetation and Habitat

The proposed project, combined with the past, present and reasonably foreseeable actions identified in Table 5-2, would cause permanent or long-term loss of desert vegetation and habitat in the region. These effects would be mitigated through reclamation measures and through critical habitat conservation as identified in this SEIR.

The cumulative projects identified in Table 5-2 are located in desert valley areas. They would not add to the effects of the proposed Quarry expansion, which would occur in the lower mountain slopes and adjacent alluvial wash because vegetation and habitat in the two areas are distinctly different from one another.

The temporary effects on vegetation and habitat from construction of proposed Well No. 3 and associated pipeline, in combination with the cumulative projects, would impact the desert valley, where the cumulative projects are also located. The past, present, and reasonably foreseeable future projects are subject to their own project-specific mitigation requirements. The effects of pipeline construction on valley floor vegetation and habitat would be minimal, and temporary, limited to the duration of construction, with longer-term habitat impacts mitigated through measures identified in Section 4.2. With implementation of these mitigation measures, the cumulative contribution to impacts on vegetation and habitat from the proposed project would not be substantial.

Peninsular Bighorn Sheep and Critical Habitat

The critical habitat of PBS in the vicinity of the project site is defined in USFWS' final rule revising its 2001 designation (Federal Register 74(70):17288-17365. April 14, 2009). Four projects identified in Table 5-1 are located within or near the PBS recovery units identified in the USFWS 2000 Recovery Plan for PBS (the SDG&E Switchyard from Ocotillo Express Modification, Sunrise Powerlink Transmission Project, Ocotillo Wind Energy Facility, and the Granite/IVA ROW Assignment). The Sunrise Powerlink project is partially located within designated critical habitat for PBS.

The proposed project would avoid take and minimize effects on PBS through a series of avoidance and monitoring measures provided in Section 4.2. Over time, Quarry reclamation would rectify the direct effects to both suitable habitat and critical habitat. Consultation with the USFWS may also result in minimization of adverse effects to designated critical habitat. By incorporating the proposed mitigation measures, the net effect of the proposed project on PBS and its critical habitat would be minimized. Similarly, the cumulative projects listed above each included mitigation to minimize its net effect on biological resources. Therefore, with incorporation of the mitigation measures in Section 4.1, the contribution of the proposed project to cumulative effects on PBS and its critical habitat would be negligible.

Desert Pupfish

The proposed project would not affect desert pupfish (see Impact 4.2-2) and therefore, would not contribute to any cumulative effects of the past, present and reasonably foreseeable actions identified in Table 5-2.

Sensitive Reptiles

The pipeline component of the proposed project could affect the flat-tailed horned lizard or (less likely) Colorado desert fringe-toed lizard by causing displacement, injury, or mortality to individual animals, or by causing temporary disturbance to its dune and sand field habitat. These potential effects would be minimized and mitigated through measures identified in Section 4.1, including measures required under the Flat-tailed Horned Lizard Rangewide Management Strategy. By incorporating these mitigation measures, the net effect of the proposed project on flat-tailed horned lizard, Colorado Desert fringe-toed lizard, and both species' habitat would be minor. Additionally, the USFWS (2011b, cited in Aspen 2019) determined that flat-tailed horned lizard populations within Management Area are not low or declining and that most populations, with the exception of occurrences in the Coachella Valley, are not likely to become endangered in the foreseeable future. The Rangewide Management Strategy reduces threats and promotes actions that benefit the flat-tailed horned lizard throughout its range, and "there is no information to suggest that the flat-tailed horned lizard population is declining or is in danger of becoming an endangered species in the foreseeable future." Measures to conserve and mitigate flat-tailed horned lizard habitat would also benefit Colorado Desert fringe-toed lizard.

The cumulative projects listed in Table 5-2 could affect both lizard species. The proposed project as well as the cumulative projects, are subject to avoidance and mitigation requirements of the flat-tailed horned lizard management strategy (Flat-tailed Horned Lizard Interagency Management Committee 2003). The contribution of the proposed project, as mitigated, to cumulative effects on the flat-tailed horned lizard would be minimal and less than cumulatively considerable. The combined effects of the proposed and cumulative projects, with required mitigation, would be less than significant.

Burrowing Owl

One burrowing owl was observed outside the breeding season in the proposed Quarry expansion area. Burrowing owls could occur elsewhere on the project site, although no other sign was observed. Mitigation measures identified in Section 4.2 would avoid take or other direct effects to burrowing owls. In addition, the effects of the proposed project on burrowing owl habitat would be mitigated through the proposed reclamation measures. Burrowing owls in the agricultural regions of Imperial valley appear to be declining in numbers, largely due to land use conversions and fallowing of formerly irrigated croplands, which provided highly productive foraging habitat for burrowing owls. These effects are cumulatively important to burrowing owls in the region but are distant from the area of the project site. The effects of the proposed project, as mitigated, would contribute negligibly to the cumulative decline in regional burrowing owl numbers.

Wide-ranging Special-status Wildlife

Wide-ranging species such as golden eagle, desert kit fox, and American badger have not been observe on the project site, but these species could use the sites for foraging, breeding, or as a travel route. The effects on wildlife of the proposed project, combined with the past, present and reasonably foreseeable actions, could include permanent or long-term loss of habitat or displacement of individuals from disturbed areas. Mortality or injury is unlikely because these species would disperse away from vehicles and equipment. The five projects identified previously could result in similar effects. However, the combined effect of these projects on wide-ranging, special-status wildlife is limited because extensive undisturbed habitat areas remain throughout the region (e.g., in Anza-Borrego Desert State Park and BLM Wilderness Areas). With the incorporation of the mitigation measures identified herein, the contribution of the proposed project or its alternatives to cumulative, wide-ranging effects on special status wildlife would be minimal.

Migratory Birds

The proposed project could cause injury or mortality to migratory birds, their nests, eggs, or nestlings. Mitigation measures identified in Section 4.2 would avoid these potential effects by requiring pre-construction surveys in work areas, nest buffers, and other measures. The proposed project would not present a collision or electrocution hazards for migratory birds. With the incorporation of mitigation identified in Section 4.2, the contribution of the proposed project would avoid take of birds, eggs, and nestlings, and therefore, the contribution to cumulative effects on migratory birds is minimal.

5.3.3 Cultural Resources and Tribal Cultural Resources

Project Impacts

Project impacts pertaining to cultural resources, as described in Sections 4.3 and 4.8, are as follows:

- Impact 4.3-1: The project could cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5.
- Impact 4.3-2: The project could cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.
- Impact 4.3-3: The project could disturb any human remains, including those interred outside of dedicated cemeteries.
- Impact 4.8-1: Would the project adversely affect the significance of a tribal cultural resources, as defined in PRC §21074.

Geographic Scope

The area of analysis for cultural resources generally corresponds to the Class I archival and records search area, which was defined as a 0.25-mile radius surrounding the project APE. This area included the northern Fish Creek Mountains and the lower Salton Trough and, according to the Class I results, included many of the same types of archaeological and historic-period built-environment resources as were found within the project APE.

The cumulative effects analysis in the 2008 EIR/EIS found that new projects or other activities were not proposed at that time within the areas affected by the project that could result in a significant cumulative effect. Pacific Legacy (2018) again reviewed cumulative projects to support the analysis of the 2019 SEIS and again no new projects or other activities were identified within the project APE.

Cumulative Impact Analysis

As shown on Figure 5-1, there are no projects proposed within several miles of the project site. Most of the projects for which data are available are concentrated to the east near the towns of El Centro and Brawley and are located outside the area of analysis for cultural and tribal cultural resources. It was determined that only one project listed in Table 5-2, the Ocotillo Wind Energy Facility Project, had an adverse effect on resources that are spiritually and culturally significant to local Native American tribes even after the implementation of mitigation measures outlined in a Memorandum of Agreement. Cumulative effects to cultural resources under that project, located far to the southeast of the Quarry remained significant.

The mitigation measures described in Section 4.3 would be implemented during the project's ground disturbing activities to avoid, minimize, and/or mitigate direct effects to cultural and tribal cultural resources accidentally discovered during construction, operation, or reclamation of the project site. With mitigation, the project is not expected to have a significant impact on cultural or tribal cultural resources.

Projects identified in Table 5-2 would be subject to laws that provide various protections for cultural and tribal cultural resources. Mitigation to protect previously unknown cultural resources would reduce the severity of such impacts by requiring construction monitoring, the evaluation of inadvertent discoveries, and the avoidance or mitigation of significant cultural resources. Therefore, this cumulative impact would be less than significant.

5.3.4 Geology, Soils and Paleontological Resources

Project Impacts

Project impacts pertaining to geology, soils, and paleontological resources, as described in Section 4.4, are as follows:

- Impact 4.4-1: Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Geographic Scope

The geographic scope for the analysis of geological and slope stability impacts would include other nearby projects related to quarrying, mass grading, or other operations that would impact slope stability. The geographic scope for the analysis of paleontological resources includes the study area of the Paleontological Technical Study (Paleo Solutions 2018; Appendix F) prepared for the proposed project which consists of the project site and a one-half mile buffer around the project site. As shown on Figure 5-1, there are no foreseen projects within one-half mile of the project site.

Cumulative Impact Analysis

Geology/Slope Stability

There are two mining projects within the vicinity of the project site. One is a gold mine; the area of its disturbance is unknown. The other is a right of way serving an existing aggregate mine affecting approximately 13 acres. No other past, present, or reasonably foreseeable mining or other applicable projects were found that could affect slope stability or other geologic features within the geographic scope of this analysis. The proposed project is the only gypsum mine in Imperial County and the region. There would be no contribution to cumulative extraction of gypsum to the area of effect.

The proposed project would not contribute to a cumulative loss of geologic resources within the study area or a cumulative loss of slope stability outside the project area.

Paleontological Resources

The proposed project, as discussed in Section 4.4 of this SEIR, has the potential to directly affect paleontological resources. Cumulative impacts to paleontological resources involve the loss of non-renewable scientifically important fossils and associated data, and the incremental loss to science and society of these resources over time. Land development projects have resulted in cumulative conditions affecting paleontological resources in the Imperial Valley. The implementation of paleontological resource mitigation measures during surface disturbing projects has resulted in the salvage and permanent preservation of large numbers of scientifically significant paleontological resources that would otherwise have been destroyed. This has greatly reduced the cumulative effects of such projects on paleontological resources and has resulted in the beneficial cumulative effect of making these fossils available for scientific research and education by placing them in museum collections.

Unknown, unrecorded paleontological resources may be found at nearly any present and future development site located within Pleistocene or older sedimentary geologic deposits within Imperial County. When discovered, paleontological resources are treated in accordance with applicable federal and State laws and regulations as well as with the mitigation measures and permit requirements applicable to a project. Generally, as fossil localities are discovered, they are recorded. If the nature of the resource requires it, the resource is either protected (i.e., avoided) or collected for future research or educational use.

It is not known what paleontological resources, if any, would be affected by development of all present and future projects identified in Table 5-2. However, given the density of past development in San Diego and Imperial counties, and the large number of reasonably foreseeable projects listed in Table 5-2, it is reasonable to assume that resources exist and could be uncovered at multiple sites.

Mitigation Measures 3.2-2 and 3.2-3 require that resources discovered during construction of the proposed project be protected, thereby reducing impacts. Surveys conducted of the project area in 2018 indicated few if any additional scientifically significant fossils would remain on the ground surface within the project site. Thus, the project's contribution to cumulative impacts to paleontological resources in the region would be less than cumulative considerable.

5.3.5 Greenhouse Gas Emissions

Project Impacts

Project impacts pertaining to geology, soils, and paleontological resources, as described in Section 4.4, are as follows:

- Impact 4.5-1: Greenhouse gas emissions generated by project activities could have a significant impact on global climate change.
- Impact 4.5-2: Consistency with applicable GHG plans, policies, or regulations.

Geographic Scope

The geographic scope for greenhouse gas emissions is the Salton Sea Air Basin (SSAB).

Cumulative Impact Analysis

Greenhouse gas analysis is inherently cumulative because it relies on regional, state-wide, and national data. As discussed in Section 4.5 of this SEIR, the proposed project would result in emissions of GHGs associated with heavy equipment use during Quarry operation and construction of Well No. 3 and the associated pipeline. However, these emissions would not exceed the established GHG significance thresholds of either the ICAPCD or the SDAPCD. Implementation of the mitigation measures described in Section 4.5, including measures to reduce diesel equipment exhaust emissions, would further reduce the project's GHG emissions and render its contribution to global climate change less than cumulatively considerable.

5.3.6 Hydrology and Water Quality

Project Impacts

Project impacts pertaining to geology, soils, and paleontological resources, as described in Section 4.4, are as follows:

- Impact 4.6-1: The project could violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
- Impact 4.6-2: The project could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- Impact 4.6-3: The project could substantially alter the existing drainage pattern of the site resulting in substantial erosion or siltation, flooding on or offsite, the provision of substantial additional sources of polluted runoff, or the impediment or redirection of flood flows.
- Impact 4.6-4: The project could release pollutants in the event of inundation from flood, tsunami, or seiche.
- Impact 4.6-5: The project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Geographic Scope

The geographic area used for evaluating the cumulative effects of the proposed project on surface water resources is the affected Fish Creek Wash (HUC 181002030602) and San Felipe Creek (HUC 18100203) watersheds. The geographic area is included within the area shown on Figure 5-1.

Cumulative Impact Analysis

As discussed in Section 4.6, the proposed project would result in adverse direct and indirect effects on hydrology and water quality. These impacts include: (1) temporary impacts on a number of ephemeral streambeds along the course of the proposed pipeline limited to effects during construction activities because the existing drainage patterns along the alignment would be preserved; and (2) potential reduction of surface flows and sediment loading to the Fish Creek Wash alluvial fan and San Felipe Creek. The cumulative effects analysis was limited to a review of projects that would also result in adverse effects to the watersheds of Fish Creek and/or San Felipe Creek, of which there were none identified. Therefore, there would be no cumulative impact to hydrology and water quality.

5.3.7 Land Use and Planning

Project Impacts

Project impacts pertaining to land use and planning, as described in Section 4.6, are as follows:

- Impact 4.7-1: Physically divide an established community.
- Impact 4.7-2: Conflict with land use plans, policies, and regulations

Geographic Scope

The geographic scope for analyzing land use impacts is Imperial County.

Cumulative Impact Analysis

These two impacts consider the specific attributes of the proposed project in relation to surrounding uses and to the County General Plan and zoning. Impact 4.7-1 determined that the project would have no potential to result in the physical division of an established community as there are no such communities in the vicinity. Impact 4.7-2 determined that, as an established mining operation, the project would not be in conflict with the Imperial County General Plan, zoning ordinance, or any other land use policies or regulations. There would be no cumulative impact.

5.3.8 Summary of Significant and Unavoidable Cumulative Impacts

As discussed in the preceding sections, the project would not result in any significant cumulative impacts.

CHAPTER 6: ALTERNATIVES

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CHAPTER 6: ALTERNATIVES

6.1 INTRODUCTION

This chapter describes a range of project alternatives and compares the associated potential environmental impacts to those of the proposed project. Section 6.2, "CEQA Requirements for Alternatives Analysis," discusses the California Environmental Quality Act (CEQA) requirements for considering alternatives to the project. Section 6.3, "Summary of Project Objectives and Impacts," provides a summary of the project and its significant and unavoidable impacts. Section 6.4, "Alternatives Formulation Process and Description of Project Alternatives," discusses the alternatives formulation process and describes the alternatives evaluated. Finally, Section 6.5, "Alternatives Impact Analysis and Summary," provides an analysis of the alternatives as compared to the project, and Section 6.6, "Environmentally Superior Alternative," identifies the *environmentally superior alternative*, as required by CEQA. Table 6-1, "Alternatives Impact Comparison Summary," in Section 6.5, summarizes the conclusions of the alternatives analysis.

6.2 CEQA REQUIREMENTS FOR ALTERNATIVES ANALYSIS

The CEQA Guidelines specify that an EIR must describe a reasonable range of alternatives to the project, or to the location of the project, which could feasibly attain most of the basic project objectives (Guidelines §15126.6(a)). The alternatives analysis must focus on alternatives that are capable of eliminating or substantially reducing the significant adverse impacts caused by the project (Guidelines §15126.6(c)), and alternatives to the "*whole of the project*" rather than the project's component parts.[1] An EIR must include an alternatives analysis even if the EIR concludes that the project will not cause any significant adverse impacts.

The "no project" alternative, which considers impacts that would occur if existing conditions continued, must be considered (Guidelines §15126.6(e)), and the EIR must also identify the environmentally superior alternative. If the "no project" alternative is the environmentally superior alternative, the EIR must identify an environmentally superior alternative from among the other alternatives (Guidelines §15126.6(e)(2)). The EIR should not consider alternatives "whose effect cannot be reasonably ascertained and whose *implementation is remote and speculative*" (Guidelines §15126.6(f)(3), emphasis added). An EIR need not evaluate an alternative that is considered speculative, theoretical, or unreasonable. Not every potentially feasible alternative need be considered; rather, the relevant test is whether a "*reasonable range*" of feasible alternatives is considered for that particular project (Guidelines §15126.6(a)).

6.3 SUMMARY OF PROJECT OBJECTIVES AND IMPACTS

6.3.1 Project Objectives

The CEQA Guidelines provide that "the range of potential alternatives...shall include those that could feasibly accomplish most of the basic objectives of the project..." (§15126.6(c)). The overall goal of the project is to develop a groundwater water and associated pipeline to support expansion of the quarry and to fulfill

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[1] *Big Rock Mesas Property Association v. Board of Supervisors of the County of Los Angeles* (2d Dist. 1977) 73 Cal. App. 3d 218).

mitigation requirements by restoring and preserving two off-site properties. As defined in Section 2.4, “Project Objectives,” of Chapter 2, “Project Description,” specific project objectives include the following:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;
2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
3) Meet market demands for gypsum products;
4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
5) Concurrently reclaim Quarry site for post-mining uses as Open Space;
6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter Cologne Act.

6.3.2 Significant and Unavoidable Impacts of the Proposed Project

After applying CEQA standards of significance to the entire range of adverse impacts that would result from implementation of the project, no new or more severe significant and unavoidable impacts have been identified through the analysis presented in Sections 4.1 through 4.8. nor in Chapter 5, “Cumulative Impacts.”

As stated above, all of the projects potentially significant impacts could be reduced to less than significant levels through implementation of mitigation measures identified in Chapter 4, “Environmental Analysis.” The alternatives evaluation summary table (Table 6-1) in Section 6.5 includes a list of each of the project impacts identified in Chapter 4 of this SEIR and identifies their significance both with and without the identified mitigation measures as compared to the impacts under each alternative. Significant impacts that could be mitigated to a level of less than significant were also considered in the alternatives formulation process, particularly those that address impacts to jurisdictional waters, air pollutant emissions, impacts to wildlife species and their habitats.

6.4 ALTERNATIVES FORMULATION PROCESS AND DESCRIPTION OF PROJECT ALTERNATIVES

This section discusses the County’s process for formulating alternatives to the project for analysis in this SEIR including a discussion of alternatives considered but eliminated from further consideration and the reasons for their elimination. The section then provides a description of the project alternatives that are evaluated in Section 6.5.

Project alternatives were developed by Imperial County based on the previous environmental review completed for the project and on input from the project applicant, other responsible agencies, and the public scoping process. Alternatives were evaluated for inclusion in the SEIR based on the following criteria:

- Was the alternative evaluated in the 2008 EIR/EIS?
- Does the alternative fulfill all or most of the project objectives (see Section 6.3.1, above)?

- Does the alternative avoid or reduce effects to the physical environment compared to the proposed project?
- Is the alternative feasible to implement?

Alternatives that met most, or all, of the criteria listed above were carried forward for analysis and are detailed in Section 6.4.2, "Alternatives Evaluated in Detail," below. Those that did not meet the above criteria or were eliminated from further analysis in the 2008 EIR/EIS are listed below, along with the reasons for elimination.

6.4.1 Alternatives Considered but Rejected from Further Analysis

The following alternatives have been considered by Imperial County but rejected from further analysis for the reasons discussed below.

- Alternative Quarry Locations
  - This alternative was rejected based on the historic establishment and vested rights of the Quarry as well as the Quarry's ore representing a unique and significant source of gypsum in the region and on the West Coast. Additionally, off-site locations were considered to be impractical because of: (1) compromised gypsum quality; (2) small deposit size; (3) long distance from USG'S existing Plaster City production plant; and (4) most off-site deposits being owned by USG'S market competitors.
- Inert Material Storage Area
  - This alternative was rejected based on economic, environmental, and technological factors.
- Alternative Mining Methods including Block and Pillar[2], Block Caving[3], Long Wall[4], and Stoping[5]
  - This alternative was rejected based on safety and feasibility concerns posed by highly fractured and soft rock quality.
- Quarry Watershed Modified Mining Footprint
  - Eliminating mining Phases 9, 8, 7, and 6 was considered but was determined to be infeasible for the following reasons: (1) Phases 8 and 9 are at the southernmost terminus of the upper Quarry watershed where the channels are deeply incised by natural erosion and a substantive reduction in losses of waters of the United States is not anticipated and (2) the potential elimination of either Phase 6 or 7 was considered but, similar to issues in the middle Quarry watershed, the elimination of either of these phases would result in an increase in indirect effects on waters of the United States and a loss of functions and services resulting from the isolation and fragmentation of these resources.
- Alternative Offsite Mitigation Sites
  - Numerous potential mitigation sites were identified and evaluated in the Draft Habitat Mitigation and Monitoring Plan (see Appendix D-4). All but the selected Viking Ranch site and Old Kane Springs Road site were rejected from consideration due to low mitigation value, being located

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[2] A mining system in which the mined material is extracted across a horizontal plane, creating horizontal arrays of rooms and pillars.

[3] An underground hardrock mining method that involves undermining an ore body, allowing it to progressively collapse under its own weigh.

[4] A form of underground mining where a long wall of material is mined in a single slice.

[5] The opening of large underground rooms, or stopes, by the excavation of ore.

outside of the target watershed, small size and/or different type of aquatic resource, or already being permitted for future development.

6.4.2 Alternatives Evaluated in Detail

The alternatives to the proposed project evaluated in the 2008 EIR/EIS included: (1) No Action Alternative, (2) Partial Use of Water from IID, and (3) Full Use of Water from IID. The No Action Alternative is carried over to this SEIR for supplemental evaluation. Alternatives 2 and 3 relate to a project component evaluated in the 2008 EIR/EIS (Plaster City Plant Water Line Replacement) which is not evaluated in this SEIR. For this reason, Alternatives 2 and 3 are not carried over to this SEIR for evaluation.

The following alternatives to the proposed project are described below and evaluated in Section 6.5 of this SEIR:

- Alternative 1: No Project
- Alternative 2: Lower Quarry Watershed Reduced Mining Footprint “A” Alternative
- Alternative 3: Lower Quarry Watershed Reduced Mining Footprint “B” Alternative
- Alternative 4: Middle Quarry Watershed Reduced Mining Footprint Alternative
- Alternative 5: Upper Quarry Watershed Reduced Mining Footprint Alternative

6.4.2.1 Features Common to All Project Alternatives

Quarry Operations

Surface quarrying methods as described in Chapter 2, “Project Description,” of this SEIR and including the BMPs listed below which are currently in place at the Quarry are common to all of the project alternatives considered. Quarrying operations would be conducted under the proposed project in accordance with the County-approved Mine and Mine Reclamation Plans and a BLM-approved Plan of Operations. Currently permitted quarrying activities would continue at the maximum production of 1.92 million tons per year until the resource is exhausted.

Quarry Reclamation Techniques

Certain aspects of reclaiming disturbed quarry areas under all alternatives would occur using the same techniques as described in the currently approved Mine Reclamation Plan. Where feasible, reclamation would occur concurrently during mining operations. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. The steepest portion of the hillside quarries would be sloped no steeper than 1H:1V (Horizontal:Vertical) slopes and about 100 feet high. The site access on the north would remain gated. The privately held lands would not be open to public recreational use. The benched hillsides would be recontoured by blasting or dozing the benches to soften the topography.

Once quarrying operations are terminated, equipment and structures would be removed; their foundations would be reduced below grade and covered in place. It is likely that an office or trailer would remain on site for ongoing revegetation monitoring, and for security purposes. The access road would be maintained for access to the main process area site and specific haul roads would be maintained to access reclamation activity and monitoring. Those portions of the rail line at natural surface elevation would remain in place. The length of rail proceeding below original ground line under the rock storage building will be removed and the spur cut backfilled. Ultimately all equipment, power poles, and buildings would be removed, road access would be restricted by gates, warning signs would be posted, and access to Quarry benches would be blocked by berms and/or boulders.

Revegetation

Revegetation efforts are fully described in the Mine Reclamation Plan and would be varied over the life of the operation. The revegetation techniques are proposed as guidelines that would be followed until new information or techniques become available, which could improve the results of the revegetation activities. Revegetation efforts would use seeds and plants of native species collected locally (on-site and on adjacent areas). The undisturbed portions of the Quarry and areas adjacent to the Quarry provide the targets for achievement through the revegetation effort. The areas to be disturbed by future mining would also provide specimens for direct transplanting of native species, and the undisturbed areas would provide a source of seeds for the revegetation effort.

Best Management Practices

USG has operated the Quarry since 1945 and has established protocols to meet regulatory requirements and to be good stewards of the land on which it operates. The following BMPs have been in place at the Quarry for decades and will continue to be implemented as part of normal operations.

- Dust control measures are based on guidance and strategies presented in the Imperial County 2009 PM_{10} State Implementation Plan and are included in current permits issued by the Imperial County Air Pollution Control District (ICAPCD). ICAPCD rules are available at http://www.co.imperial.ca.us/AirPollution/index.asp?fileinc=comprules
- All vehicles hauling bulk gypsum are covered with tarps or other means.
- Mine phases are reclaimed when gypsum reserves have been depleted in accordance with the approved Reclamation Plan.
- Quarry mine phases are revegetated as part of reclamation.
- Disturbed areas related to pipeline/transmission line removal and construction are reclaimed to pre-construction conditions.
- A Spill Contingency Plan/HAZWOPER Model Program is maintained with established emergency response protocols for spills of 55 gallons or more of hazardous material or 5 gallons or more of an extremely hazardous material.
- Compliance with existing adopted Mitigation Measures:
- USG maintains an integrated weed management plan to control invasive weeds including tamarisk and fountain grass in cooperation with the BLM and County of Imperial.
- USG maintains on-call contracts with a Designated Biologist who notifies BLM and USFWS prior to any new ground-disturbing activities and conducts pre-construction clearance surveys.
- USG contracts for monitoring with qualified biologists who have authority and responsibility to halt any project activities that violate mandated conservation measures.
- The Designated Biologist ensures that no Quarry expansion activity occurs while Peninsular Bighorn Sheep (PBS) are within a 0.25-mile radius of the activity.
- The Designated Biologist or Biological Monitor visits the Quarry site periodically to administer the Worker Education Awareness Program and ensure compliance with the Integrated Weed

Management Plan, the Reclamation Plan, the Wildlife Mortality Reporting Program, and the PBS Monitoring Plan.

- To the extent feasible, any new site disturbance is conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or of eggs.
- For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor is present in each area of active surface disturbance throughout the workday and will examine areas of active surface disturbance for the presence of flat-tailed horned lizard or Colorado fringe-toed lizard.
- Speed limits along all access roads (excluding haul roads) will not exceed 15 miles per hour.
- Shielded downward-directional lighting on all facilities and infrastructure at night will avoid illumination of adjacent natural areas and the night sky.
- Spoils are stockpiled only in previously disturbed areas, or in areas designated for future disturbance (including spoils areas) in the Plan of Operations.
- To avoid entrapment of birds during pipeline construction and removal, all pipes or other construction materials or supplies are covered or capped in storage or laydown areas, and checked for secure covering at the end of each workday.
- The ends of trenches are left as “escape ramps” to avoid wildlife entrapment.
- During pipeline construction, no pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.
- No anticoagulant rodenticides of any kind are used within the Plant or Quarry areas.
- All non-construction, non-mining, and food-related wastes are placed in segregated self-closing raven-proof containers (excluding bulk waste bins) and removed regularly from the site to prevent overflow.
- Workers do not feed wildlife.
- Pooled rainwater or floodwater within quarries areas is rare due to the fracturing of the gypsum and bedrock and occurs only during major storm events. Water is pumped for use in daily dust control activity which results in avoidance of attracting wildlife to the active work areas.
- Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, California Department of Fish and Wildlife (CDFW), or a CDFW-approved veterinary facility as soon as possible for determining the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.
- If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is/are no longer present. Owls shall not be harassed to reduce the length of time owls are present in a construction or excavation site.
- If avoidance of quarrying or pipeline construction within the buffer area is infeasible, burrowing owls may be excluded from an active wintering season burrow in coordination with CDFW and

in accordance with CDFW guidelines, including provision of replacement burrows prior to the exclusion.

- USG will be responsible for monitoring and reporting PBS activity in the Quarry area during the life of the project in accordance with a PBS monitoring plan approved by the CDFW and USFWS.

6.4.2.2 Alternative 1: No Project

Under the No Project Alternative, a new Conditional Use Permit (CUP) would not be granted, and the proposed Well No. 3 and associated pipeline would not be constructed. As a result, the Quarry operation would continue to utilize Well No. 2 to produce water for dust suppression. As described in Section 2.2, "Background," of Chapter 2, Well No. 2 is not a reliable water source and fails to produce sufficient supply to meet demand. In addition, restoration and preservation of the Viking Ranch and Old Kane Springs Road sites would not occur. As a result, impacts to Waters of the US resulting from Quarry expansion could not be fully mitigated as required and mining activities would be curtailed. Thus, Alternative 1 would involve an overall reduction in mining footprint, volume, and duration as well as elimination of construction activities associated with the well, pipeline, and restoration site.

6.4.2.3 Alternative 2: Lower Quarry Watershed Reduced Mining Footprint "A" Alternatives

Alternative 2 is the same as the proposed project except that Phase 10 would not be mined to its full capacity and Phase 10P would be eliminated entirely from the proposed mining plan in order to reduce losses of waters of the United States. USG would reduce the mining depth in Phase 10, grading north to the base grade of Fish Creek (Figure 6-1, "Alternative 2: Modified Lower Watershed Mining Footprint A"). Phase 10P is considered for elimination given its position in the northernmost end of the Quarry watershed, its close proximity to Fish Creek, and the relatively low quantity of gypsum ore that would be extracted from this phase compared to other phases in the mining plan.

Under this alternative, the stormwater berm would be eliminated south of Phase 2. Instead, the natural topography of the upper Quarry watershed would direct surface water away from Phases 6 through 9. Using natural landforms would reduce the length of the berm by one mile compared with the proposed project and would eliminate the need for a complex system of transverse levees with anchored berms in the upper Quarry watershed. The stormwater berm would begin west of Phase 2, where only one transverse levee would be required, and would extend northward through Phase 10.

Phase 10 mining would occur as proposed to a reduced depth connecting with Phase 10P and progressing at an angle suitable to maintain gravity flow. A conveyance channel roughly 200 feet wide would result at the northernmost boundary of Phase 5, extending north through Phase 10 and 10P until its confluence with Fish Creek. Approximately 5.4 million tons less gypsum ore would be mined under this alternative than under the proposed project. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 2.81 years.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

6.4.2.4 Alternative 3: Lower Quarry Watershed Reduced Mining Footprint "B" Alternative

Alternative 3 is the same as the proposed project except that the mining footprint along the western boundaries of Phases 4 and 5, where Annex Mill Site #4 encroaches into an unnamed ephemeral wash, would be reconfigured to reduce losses of waters of the United States (Figure 6-2, "Alternative 3: Reduced Lower Watershed Mining Footprint B"). Phases 4 and 5 were selected for reconfiguration because of their close proximity to existing administrative/office facilities where blasting is not ideal due to noise and the depth of overburden needing to be stripped in order to mine the gypsum ore. The stormwater berm would be configured as described for Alternative 2 except that it would be modified to exclude the eliminated portions of Phases 4 and 5, include Phases 10 and 10P, and extend northward from Phase 2 through the northern limit of Phase 10P. This alternative would reduce the amount of gypsum ore mined by approximately 11.87 million tons. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 6.18 years.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

6.4.2.5 Alternative 4: Middle Quarry Watershed Reduced Mining Footprint Alternative

Alternative 4 is the same as the proposed project except that Phases 2P, 3P (North) and 3P (South) would be eliminated from the proposed mining plan to reduce losses of waters of the United States. As shown in Figure 6-3, "Alternative 4: Middle Quarry Watershed Phased Elimination," the proposed stormwater berm would be modified to exclude the eliminated phases, including Phases 10 and 10P, and extend through the northern limit of Phase 10P.

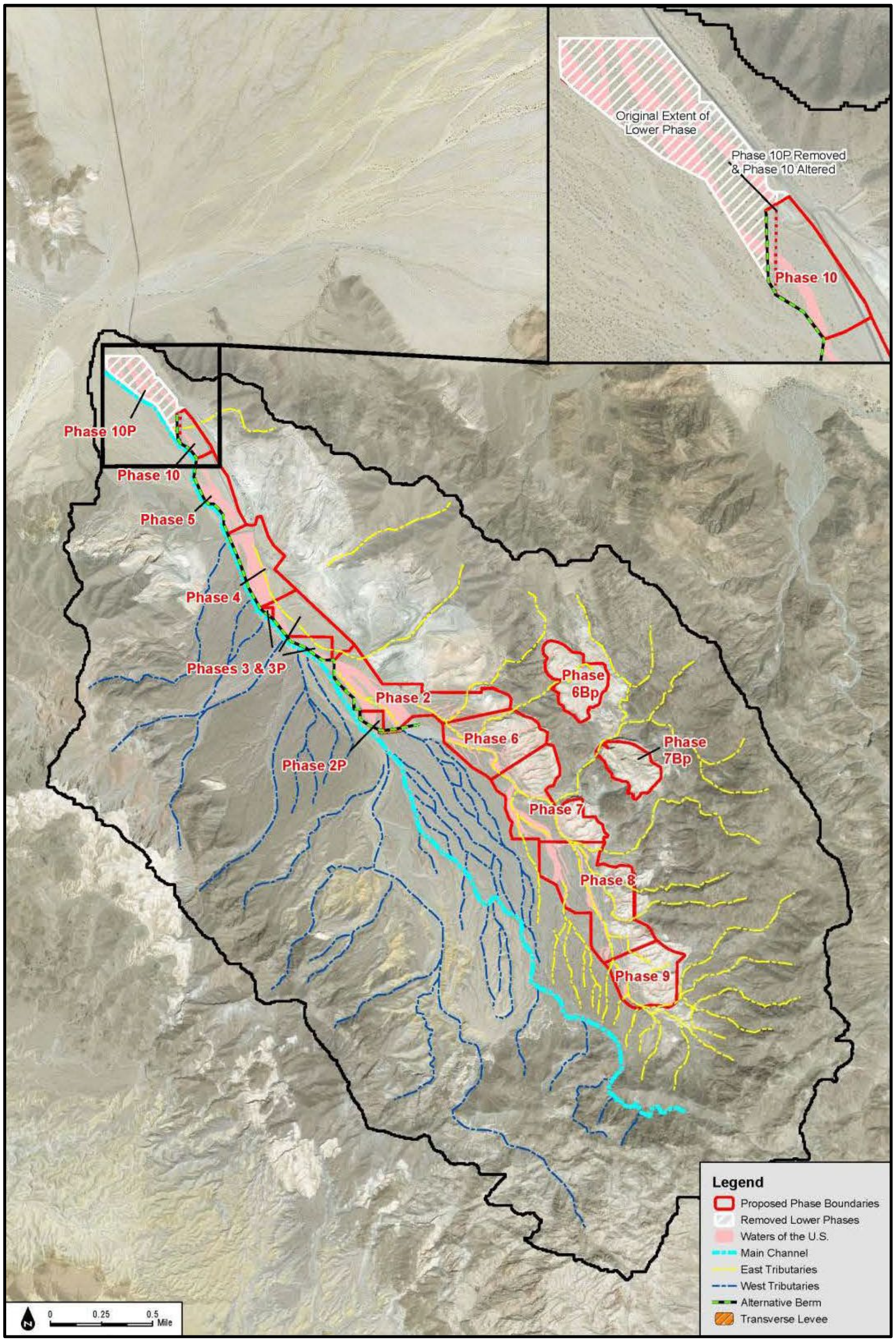
As a result of this reduced mining footprint, approximately 2.33 million tons less gypsum would be mined. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 1.21 years compared with the proposed project.

This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

6.4.2.6 Alternative 5: Upper Quarry Watershed Reduced Mining Footprint Alternative

Alternative 5 is the same as the proposed project except that the mining footprint in Phases 7 and 8 would be reconfigured to reduce losses of waters of the United States (Figure 6-4, "Alternative 5: Upper Quarry Watershed Reduced Mining Footprint"). Under this alternative, the mining boundaries of Phases 7 and 8 would be moved east parallel with the main drainage channel. The stormwater berm would be as described for Alternative 2 but would include all of Phases 10 and 10P.

The overall mining footprint would be reduced by 34 acres, thereby decreasing potential mining beneath the valley alluvium where gypsum ore has been determined to be most abundant. The amount of gypsum ore mined under this alternative would be approximately 13.04 million tons less than under the proposed project. Compared with the maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 6.79 years.



SOURCE: 2019 SEIS; Figure 2-6
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Figure 6-1
Alternative 2: Modified Lower Watershed Mining Footprint A

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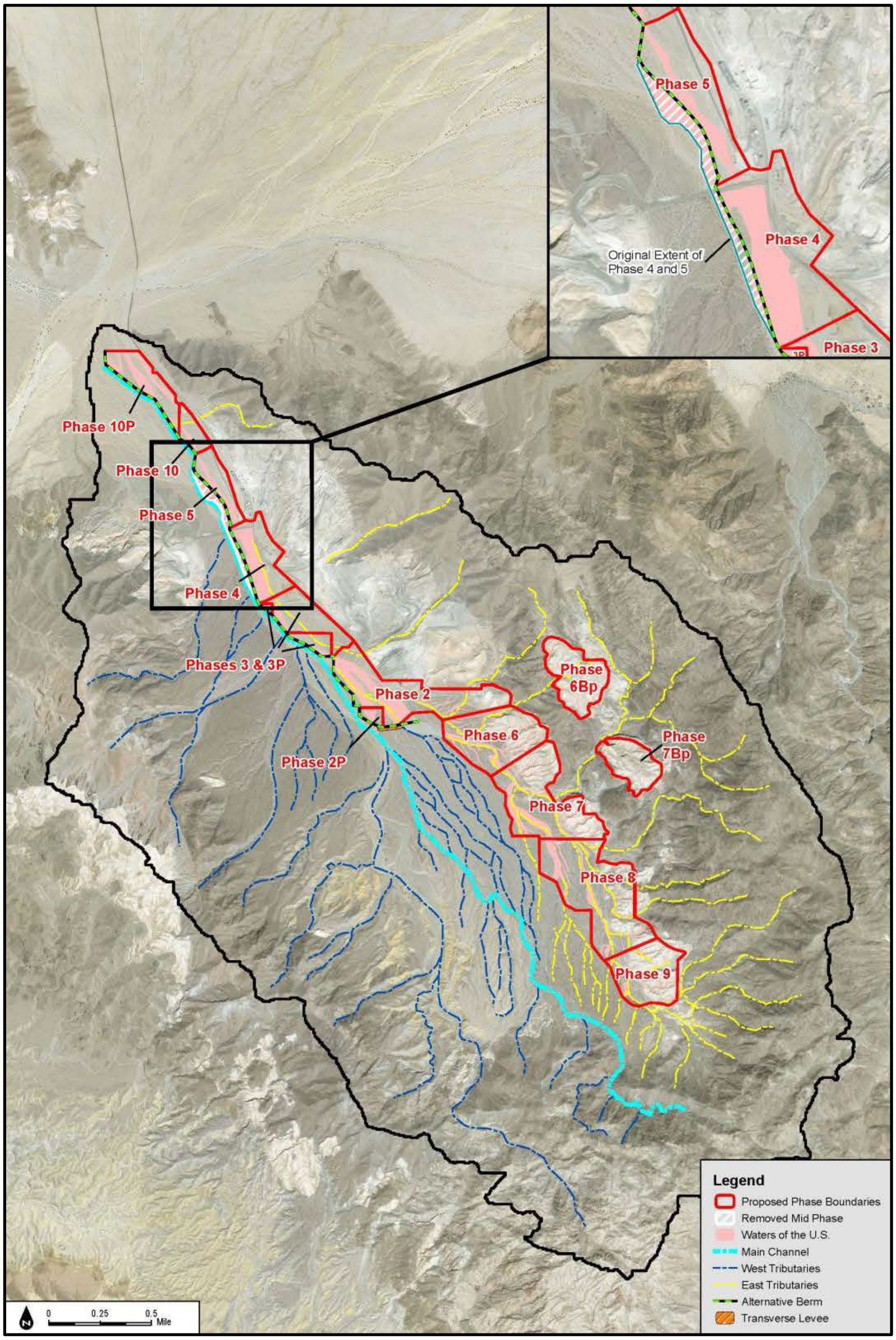

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Figure 6-2
Alternative 3: Reduced Lower Watershed Mining Footprint B

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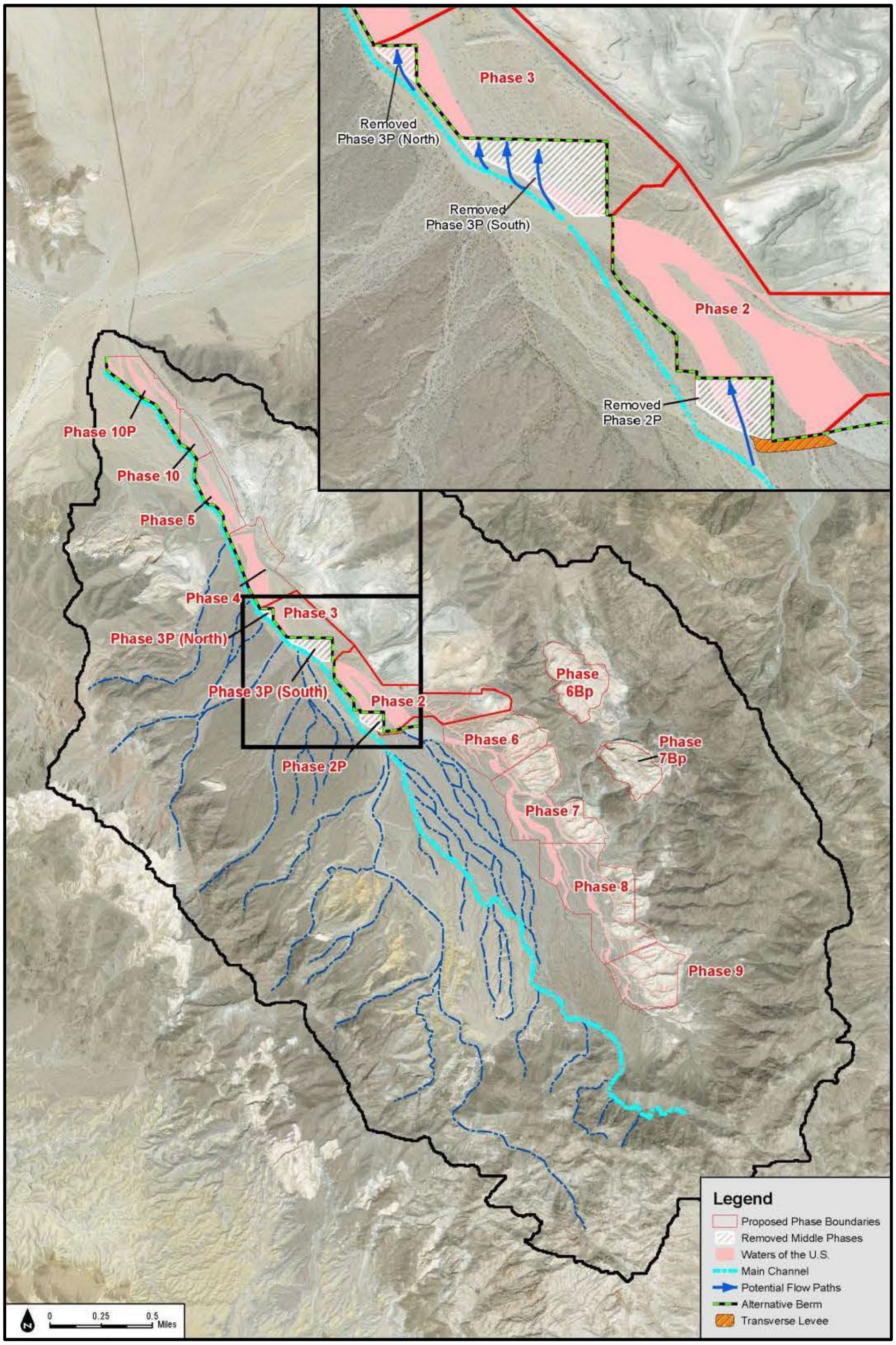

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Figure 6-3
Alternative 4: Middle Quarry Watershed Phased Elimination

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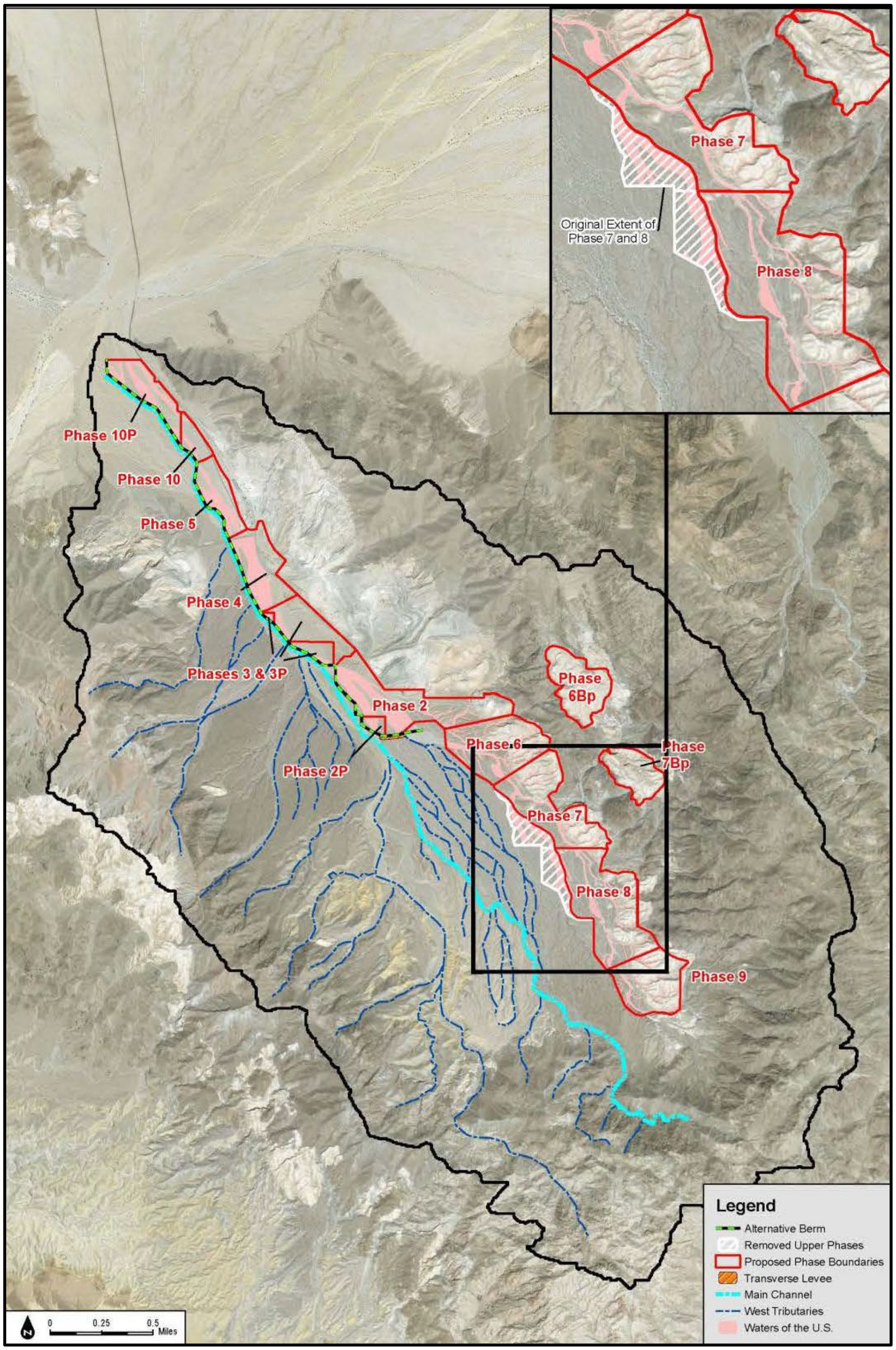

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NOTE: Image has been altered by Benchmark Resources and is not printed to scale.

Figure 6-4
Alternative 5: Upper Quarry Watershed Reduced Mining Footprint

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This alternative would include construction and operation of Well No. 3 and the associated pipeline similar to the proposed project. The Viking Ranch site and Old Kane Springs site would still be restored and preserved as wildlife habitat to offset impacts to Waters of the US within the project site.

6.5 ALTERNATIVES IMPACT ANALYSIS AND SUMMARY

The focus of the alternatives analysis in this SEIR is to explore options to mitigate or avoid the project's significant impacts. The analysis of each alternative considers whether the alternative would reduce impacts as compared to the project as proposed. In most cases, the alternatives would create the potential for reducing the magnitude, duration, or frequency of certain project impacts, but would not eliminate the impacts entirely.

As presented in Chapter 4, project impacts prior to the application of mitigation measures are identified as significant, potentially significant, or less than significant. Mitigation measures are identified, when available, for significant and potentially significant impacts, and the resulting impacts are found to be either less than significant (when mitigation would reduce a significant or potentially significant impact to below the threshold of significance) or significant and unavoidable (when either no feasible mitigation is available or when available mitigation would not reduce the impact to below the threshold of significance).

Table 6-1 provides a summary comparison of the impacts of each alternative with impacts of the project. The table lists each project impact and the significance of the project impact both without mitigation and with mitigation identified in this SEIR (if the impact without mitigation is deemed less than significant, no mitigation is needed, and the table simply lists less than significant (LS).

Table 6-1 also identifies the anticipated comparative impact of each alternative as either having no impact (NI) or an impact greater than (+), similar to (=), or less than (-) the corresponding impact of the project. In most cases, the alternatives would result in similar or lessened impacts as compared to the project, but the reduction in impact would not be of sufficient magnitude such that a significant project impact would be reduced to less than significant. For example, Quarry operations could still impact Peninsular bighorn sheep individuals and habitat. Mitigation measures applicable to project impacts would also be available to reduce commensurate impacts of the alternatives. Thus, in instances where a significant project impact would be reduced to less than significant with mitigation, the same mitigation would also reduce the impact of the alternative to less than significant unless otherwise noted.

Each of the project alternatives considered in this analysis is described in Section 6.4, above. The following sections discuss the impacts of each alternative as compared to project impacts identified in Sections 4.1, "Air Quality," through 4.8 and Chapter 5 of this SEIR. Table 6-1 below provides a summary of the comparison and the discussion in the following sections emphasizes those impact areas for which the project would result in one or more significant impacts and the alternative(s) would have the potential to lessen one or more significant impacts of the project.

Table 6-1
Alternatives Impact Comparison Summary

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives				
		1 (No Project)	*2 (Lower Quarry Watershed Reduced Mining Footprint "A")*	*3 (Lower Quarry Watershed Reduced Mining Footprint "B")*	*4 (Middle Quarry Watershed Reduced Mining Footprint)*	*5 (Upper Quarry Watershed Reduced Mining Footprint)*
Impact 4.1-1: Conflict with or Obstruct Implementation of the Applicable Air Quality Plan	LTS/LTS	=	=	=	=	=
Impact 4.1-2: Result in A Cumulatively Considerable Net Increase of Any Criteria Pollutant for Which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard	LTS/LTS	-	-	-	-	-
Impact 4.1-3: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LTS/LTS	=	=	=	=	=
Impact 4.1-4: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People	LTS/LTS	=	=	=	=	=
Impact 4.2-1: The Project Could Have Substantial Adverse Effects on Special-Status Plant Species or Plant Communities.	PS/LTS	-	-	-	-	-
Impact 4.2-2: The Project Could Have Substantial Adverse Effects on Special-Status Wildlife Species	PS/LTS	-	-	-	-	-
Impact 4.2-3: The Project Could Have Substantial Adverse Effects on State or Federally Protected Wetlands	PS/LTS	-	-	-	-	-
Impact 4.2-4: The Project Would Not Interfere Substantially with Native Wildlife Movement or Impede Nursery Site Use	PS/LTS	-	-	-	-	-
Impact 4.2-5: The Project Would Not Conflict with Any Local Policies or Ordinances Protecting Biological Resources or	PS/LTS	=	=	=	=	=

Impact	**Project Impact Significance without/with Mitigation**[1]	**Alternatives**				
		1 (No Project)	***2 (Lower Quarry Watershed Reduced Mining Footprint "A")***	***3 (Lower Quarry Watershed Reduced Mining Footprint "B")***	***4 (Middle Quarry Watershed Reduced Mining Footprint)***	***5 (Upper Quarry Watershed Reduced Mining Footprint)***
with Any Adopted Habitat Conservation Plan or Natural Community Conservation Plan.						
Impact 4.3-1: The Project Could Cause a Substantial Adverse Change in the Significance of a Historical Resource Pursuant to §15064.5.	PS/LTS	-	-	-	-	-
Impact 4.3-2: The Project Could Cause a Substantial Adverse Change in the Significance of An Archaeological Resource Pursuant to §15064.5.	PS/LTS	-	-	-	-	-
Impact 4.3-3: The Project Could Disturb Any Human Remains, Including Those Interred Outside of Dedicated Cemeteries	PS/LTS	-	-	-	-	-
Impact 4.4-1: Directly or Indirectly Destroy a Unique Paleontological Resource or Site or Unique Geological Feature	PS/LTS	-	-	-	-	-
Impact 4.5-1: Greenhouse Gas Emissions Generated by Project Activities Could Have a Significant Impact on Global Climate Change.	LTS/LTS	-	-	-	-	-
Impact 4.5-2: Consistency with Applicable GHG Plans, Policies, or Regulations.	LTS/LTS	=	=	=	=	=
Impact 4.6-1: The Project Could Violate Water Quality Standards or Waste Discharge Requirements or Otherwise Substantially Degrade Surface or Ground Water Quality	LTS/LTS	-	-	-	-	-
Impact 4.6-2: The Project Could Substantially Decrease Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That the Project May Impede Sustainable Groundwater Management of the Basin	LTS/LTS	-	=	=	=	=

Impact	Project Impact Significance without/with Mitigation[1]	Alternatives				
		1 (No Project)	***2 (Lower Quarry Watershed Reduced Mining Footprint "A")***	***3 (Lower Quarry Watershed Reduced Mining Footprint "B")***	***4 (Middle Quarry Watershed Reduced Mining Footprint)***	***5 (Upper Quarry Watershed Reduced Mining Footprint)***
Impact 4.6-3: The Project Could Substantially Alter the Existing Drainage Pattern of the Site Resulting in Substantial Erosion or Siltation, Flooding on or Offsite, the Provision of Substantial Additional Sources of Polluted Runoff, or the Impediment or Redirection of Flood Flows.	PS/LTS	**=**	**-**	**-**	**-**	**-**
Impact 4.6-4: The Project Could Release Pollutants in the Event of Inundation from Flood, Tsunami, or Seiche	LTS/LTS	**=**	**=**	**=**	**=**	**=**
Impact 4.6-5: The Project Could Conflict with or Obstruct Implementation of a Water Quality Control Plan or Sustainable Groundwater Management Plan	LTS/LTS	**=**	**=**	**=**	**=**	**=**
Impact 4.7-1: Physically Divide an Established Community	LTS/LTS	**=**	**=**	**=**	**=**	**=**
Impact 4.7-2: Conflict with Land Use Plans, Policies, and Regulations	LTS/LTS	**=**	**=**	**=**	**=**	**=**
Impact 4.8-1: Would the Project Adversely Affect the Significance of a Tribal Cultural Resources, As Defined in PRC § 21074	LTS/LTS	**-**	**-**	**-**	**-**	**-**

6.5.1 Alternative 1: No Project

Under Alternative 1, proposed Well No. 3 and the associated pipeline would not be constructed and the Quarry would continue to operate without a sufficient or reliable water source for dust suppression. In addition, restoration and preservation of the Viking Ranch and Old Kane Springs Road sites would not occur, nor would the associated beneficial impacts to hydrology and biological resources at those sites. As a result, impacts to Waters of the US resulting from Quarry expansion could not be fully mitigated as required and mining activities would be curtailed. Thus, Alternative 1 would involve an overall reduced mining footprint, volume, and duration as well as elimination of construction activities associated with the well, pipeline, and restoration site.

Air Quality

Under Alternative 1, the overall footprint, volume and duration of mining would be reduced thus reducing operational air emissions. In addition, the elimination of construction activities at the well site, pipeline alignment, and the Viking Ranch site would substantially reduce temporary construction emissions. Although emissions would be reduced under this alternative, the mitigation measures provided in the 2008 EIR/EIS would still be implemented to further reduce exhaust emissions.

Biological Resources

Under Alternative 1, the overall mining footprint would be reduced and new impacts to Waters of the US would be eliminated. Impacts to vegetation and wildlife would be similar to those identified in the 2008 EIR/EIS and no new mitigation would be required. Thus, the beneficial effects of the mitigation measures for Peninsular bighorn sheep (PBS) and other special-status species and restoration and preservation of the offsite mitigation sites would not occur.

Cultural Resources

Because the overall mining footprint would be reduced, the potential for project activities to inadvertently disturb buried cultural resources would also be reduced. However, the mitigation measures provided in Section 4.3, would still be required to fully mitigate the project’s impacts to cultural resources.

Geology, Soils, and Paleontological Resources

Because the overall mining footprint would be reduced, the potential for project activities to inadvertently disturb previously undiscovered paleontological resources would also be reduced. No new mitigation measures beyond those provided in the 2008 EIR/EIS would be required.

Greenhouse Gas Emissions

Under Alternative 1, there would be a reduction in the total area to be mined as well as a corresponding reduction in total mining volume and duration. The proposed berm would still be constructed as described in the 2008 EIR/EIS resulting in similar construction emissions. However, no construction activities would occur at the well site/pipeline corridor or at the Viking Ranch Restoration Site. Thus, temporary GHG emissions would be reduced compared to the proposed project. However, as water would need to be transported to the quarry, the GHG emissions from those trucks, which would be reduced or eliminated under the project, would be greater than the proposed project. Although emissions would be reduced under this alternative, the existing mitigation measures described in Section 4.5 would still be required to further reduce emissions and fully mitigate the project’s GHG impacts.

Hydrology and Water Quality

Under Alternative 1, the Quarry expansion would be limited to areas of the project site not containing Waters of the US; thus, impacts to jurisdictional waters on the project site would be reduced. However, this alternative would also eliminate the proposed restoration and preservation of the offsite mitigation sites. As such, the beneficial impacts of the enhancement and preservation of these offsite jurisdictional waters would not occur under this alternative. The proposed berm would still be constructed but would need to be modified to reflect the new footprint. Overall drainage patterns and related effects would be similar to the proposed project. Water quality impacts would also be similar to the proposed project. As Well No. 3 would not be constructed, groundwater pumping at Well No. 2 would continue at current levels which are below that proposed for Well No. 3. Thus, impacts to groundwater levels and local wells would be reduced compared to the proposed project.

Land Use and Planning

Both the proposed project and Alternative 1 would be consistent with all applicable land use plans, policies and regulations, would not divide a community either directly or indirectly, and would not conflict with any habitat conservation plans. Alternative 1 would result in similar impacts to land use and planning as compared to the proposed project.

Tribal Cultural Resources

Because the overall mining footprint would be reduced, the potential for project activities to inadvertently disturb buried tribal cultural resources would also be correspondingly reduced. However, the mitigation measures provided in Section 4.3 and 4.8 would still be required to fully mitigate the project’s potential impacts to tribal cultural resources.

6.5.2 Alternative 2: Lower Quarry Watershed Reduced Mining Footprint “A” Alternative

The discussion below considers the impacts of Alternative 2 as compared to the proposed project. Under the Lower Quarry Watershed Reduced Mining Footprint “A” Alternative, Phase 10 would not be fully mined, and Phase 10 would be eliminated in order to avoid jurisdictional waters. Also under this alternative, the proposed stormwater berm would be reduced in length and overall mining activity would be reduced/shortened. All other project components would be identical to the proposed project including construction of Well No. 3 and associated pipeline and restoration/preservation of the offsite mitigation sites.

Air Quality

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative the mitigation measures described in Section 4.1 would still be required to further reduce emissions and mitigate the project’s air quality impacts.

Biological Resources

Under Alternative 2, the total area impacted by mining of Phase 10 would be reduced from 21.4 acres to 6.6 acres thus eliminating direct impacts on the arroyo wash and avoiding the downstream impacts on Fish Creek. Because the overall footprint of the area to be mined would be reduced, this alternative would proportionally reduce impacts on alluvial wash vegetation and habitat. Effects to annual rock-nettle and other species could be slightly less, depending on local extent of occupied habitat during a given year. Mitigation measures would be the same as identified for the proposed project.

The impacts of Alternative 2 on wildlife would be the same as described for the proposed project but would be quantitatively slightly less due to the reduced Quarry footprint. This alternative would reduce the northernmost extent of the Quarry and thus could have slightly less impact to localized wildlife movement across the canyon, between mountainous habitat to the east and west. Impacts on PBS and barefoot banded gecko would be the same as described for the proposed project but may be quantitatively slightly less due to the reduced Quarry footprint. This alternative, like the proposed project, would not affect Swainson's hawk or desert pupfish. Mitigation measures for wildlife species would be the same as identified for the proposed project.

Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried cultural resources would also be reduced. However, the mitigation measures provided in Section 4.3 would still be required to fully mitigate the project's impacts to cultural resources.

Geology, Soils, and Paleontological Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried paleontological resources would also be reduced. However, the mitigation measures provided in Section 4.4 would still be required to fully mitigate the project's impacts to paleontological resources.

Greenhouse Gas Emissions

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational GHG emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.5 would still be required to mitigate the project's GHG impacts.

Hydrology and Water Quality

Alternative 2 would reduce mining of Phase 10 and eliminate mining of Phase 10P and would modify the proposed berm including elimination of the berm between Phases 6 and 9 where a natural topographic break would serve as the storm water barrier instead. This modified berm alignment would allow for an additional 120 acres to discharge into the Quarry, but at least two percent of the total watershed area it is considered minimal and would not represent a change in the modeled hydrologic analysis of the easterly and westerly peak flow rates identified for the proposed project.

The impacts on hydrologic resources associated with this alternative are similar in nature to the proposed project, although they differ in their extent. The total losses of Waters of the US would be reduced from 133.63 acres to 117.62 acres for the mining area and berm alone. Eliminating Phase 10P would eliminate direct impacts on the wash along the boundary of that phase and would avoid indirect downstream impacts from Phase 10P on Fish Creek.

Land Use and Planning

Both the proposed project and Alternative 1 would be consistent with all applicable land use plans, policies and regulations, would not divide a community either directly or indirectly, and would not conflict with any habitat conservation plans. Alternative 1 would result in similar impacts to land use and planning as compared to the proposed project.

Tribal Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried tribal cultural resources would also be reduced. However, the mitigation measures referenced in Section 4.8 would still be required to fully mitigate the project's impacts to tribal cultural resources.

6.5.3 Alternative 3: Lower Quarry Watershed Reduced Mining Footprint "B" Alternative

The discussion below considers the impacts of Alternative 3 as compared to the proposed project. Under the Lower Quarry Watershed Reduced Mining Footprint "B" Alternative, the western boundaries of Phases 4 and 5 would be reconfigured to reduce losses of waters of the United States. Also under this alternative, the proposed stormwater berm would be reduced in length and overall mining activity would be reduced/shortened. All other project components would be identical to the proposed project including construction of Well No. 3 and associated pipeline and restoration/preservation of the offsite mitigation sites.

Air Quality

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.1 would still be required to mitigate the project's air quality impacts.

Biological Resources

Under Alternative 3, Phases 4 and 5 would be reconfigured to reduce losses of Waters of the US and the berm would be correspondingly modified. The total area impacted in these phases would be 45.09 acres, compared with 53.71 acres under the proposed project, thus reducing direct impacts on the arroyo wash and avoiding the downstream impacts of Fish Creek.

Because the overall footprint of the area to be mined would be reduced, this alternative would proportionally reduce impacts on alluvial wash vegetation and habitat. Effects to annual rock-nettle and other species could be slightly less, depending on local extent of occupied habitat during a given year. Mitigation measures would be the same as identified for the proposed project.

The impacts of Alternative 3 on wildlife would be the same as described for the proposed project but would be quantitatively slightly less due to the reduced Quarry footprint. Impacts on PBS and barefoot banded gecko would be the same as described for the proposed project but may be quantitatively slightly less due to the reduced Quarry footprint. This alternative, like the proposed project, would not affect Swainson's hawk or desert pupfish. Mitigation measures for wildlife species would be the same as identified for the proposed project.

Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried cultural resources would also be reduced. However, the mitigation measures provided in Section 4.3 would still be required to fully mitigate the project's impacts to cultural resources.

Geology, Soils, and Paleontological Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried paleontological resources would also be reduced. However, the mitigation measures provided in Section 4.4 would still be required to fully mitigate the project's impacts to paleontological resources.

Greenhouse Gas Emissions

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational GHG emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.5 would still be required to mitigate the project's GHG impacts.

Hydrology and Water Quality

Under Alternative 3, the nature of the impacts on hydrologic resources would be the same as the proposed project. The total loss of Waters of the US would be reduced from 133.63 acres under the proposed project to 125.43 acres.

Land Use and Planning

Both the proposed project and Alternative 1 would be consistent with all applicable land use plans, policies and regulations, would not divide a community either directly or indirectly, and would not conflict with any habitat conservation plans. Alternative 1 would result in similar impacts to land use and planning as compared to the proposed project.

Tribal Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried tribal cultural resources would also be reduced. However, the mitigation measures referenced in Section 4.8 would still be required to fully mitigate the project's impacts to tribal cultural resources.

6.5.4 Alternative 4: Middle Quarry Watershed Reduced Mining Footprint Alternative

The discussion below considers the impacts of Alternative 4 as compared to the proposed project. Under the Middle Quarry Watershed Reduced Mining Footprint Alternative, mining Phases 2P, 3P (North) and 3P (South) would be eliminated to reduce losses of waters of the United States. Also under this alternative, the proposed stormwater berm would be reduced in length and overall mining activity would be reduced/shortened. All other project components would be identical to the proposed project including construction of Well No. 3 and associated pipeline and restoration/preservation of the offsite mitigation sites.

Air Quality

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.1 would still be required to mitigate the project's air quality impacts.

Biological Resources

Under Alternative 4, Phases 2P, 3P (North) and 3P (South) would be eliminated to reduce losses of Waters of the US and the berm would be correspondingly modified. The removal of these three phases would realign the proposed storm water berm such that it would be nearly perpendicular to flow in the main channel along three significant sections where the phases are proposed for removal (from approximately 300 to 1,300 feet long).

By eliminating these phases, Alternative 4 would slightly reduce mining impacts on upland and alluvial wash vegetation (primarily creosote bush scrub and sparsely vegetated sandy wash). Other impacts on vegetation and habitat would be similar to the proposed project. Effects to annual rock-nettle and other species could be slightly less, depending on local extent of occupied habitat during a given year. Mitigation measures would be the same as identified for the proposed project.

The impacts of Alternative 4 on wildlife, including PBS and barefoot banded gecko, would be the same as described for the proposed project but would be quantitatively slightly less due to the reduced Quarry footprint. This alternative, like the proposed project, would not affect Swainson's hawk or desert pupfish. Mitigation measures for wildlife species would be the same as identified for the proposed project.

Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried cultural resources would also be reduced. However, the mitigation measures provided in Section 4.3 would still be required to fully mitigate the project's impacts to cultural resources.

Geology, Soils, and Paleontological Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried paleontological resources would also be reduced. However, the mitigation measures provided in Section 4.4 would still be required to fully mitigate the project's impacts to paleontological resources.

Greenhouse Gas Emissions

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational GHG emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.5 would still be required to mitigate the project's GHG impacts.

Hydrology and Water Quality

Under Alternative 4, the impacts on hydrologic resources would be similar in nature to the proposed project. The direct loss of waters of the US would be reduced from 133.63 acres under the proposed project to 126.78 acres and the same mitigation would be required to address this loss. However, indirect impacts would increase under this alternative as mining would continue in the channel immediately upstream and downstream of Phases 2P, 3P (North), and 3P (South).

Land Use and Planning

Both the proposed project and Alternative 4 would be consistent with all applicable land use plans, policies and regulations, would not divide a community either directly or indirectly, and would not conflict with any habitat conservation plans. Alternative 1 would result in similar impacts to land use and planning as compared to the proposed project.

Tribal Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried tribal cultural resources would also be reduced. However, the mitigation measures referenced in Section 4.8 would still be required to fully mitigate the project's impacts to tribal cultural resources.

6.5.5 Alternative 5: Upper Quarry Watershed Reduced Mining Footprint Alternative

The discussion below considers the impacts of Alternative 5 as compared to the proposed project. Under the Upper Quarry Watershed Reduced Mining Footprint Alternative, mining Phases 2P, 3P (North) and 3P (South) would be eliminated to reduce losses of waters of the United States. Also under this alternative, the proposed stormwater berm would be reduced in length and overall mining activity would be reduced/shortened. All other project components would be identical to the proposed project including construction of Well No. 3 and associated pipeline and restoration/preservation of the offsite mitigation sites.

Air Quality

Because proposed mining phases would be eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.1 would still be required to fully mitigate the project's air quality impacts.

Biological Resources

Under Alternative 5, the proposed mining footprint would be reduced in Phases 7 and 8 and the proposed berm would be modified accordingly. Impacts to Waters of the US would be reduced from 32.12 acres under the proposed project to 20.05 under this alternative. The overall mining footprint would be reduced, thereby decreasing the area of disturbance and slightly reducing impacts to alluvial wash vegetation (primarily creosote bush scrub and catclaw acacia thorn scrub). Other impacts on vegetation and habitat would be similar to the proposed project. Effects to annual rock-nettle and other species could be slightly less, depending on local extent of occupied habitat during a given year. Mitigation measures would be the same as identified for the proposed project.

The impacts of Alternative 5 on wildlife, including PBS and barefoot banded gecko, would be the same as described for the proposed project but would be quantitatively slightly less due to the reduced Quarry footprint. This alternative, like the proposed project, would not affect Swainson's hawk or desert pupfish. Mitigation measures for wildlife species would be the same as identified for the proposed project.

Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried cultural resources would also be reduced. However, the mitigation measures provided in Section 4.3 would still be required to fully mitigate the project's impacts to cultural resources.

Geology, Soils, and Paleontological Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried paleontological resources would also be reduced. However, the mitigation measures provided in Section 4.4 would still be required to fully mitigate the project's impacts to paleontological resources.

Greenhouse Gas Emissions

Because proposed mining phases would be reduced or eliminated under this alternative, overall mining volume and duration would be reduced thus reducing operational GHG emissions. Furthermore, the proposed berm would be significantly reduced in length reducing construction time and associated temporary emissions. Although emissions would be reduced under this alternative, the mitigation measures described in Section 4.5 would still be required to mitigate the project's GHG impacts.

Hydrology and Water Quality

Under Alternative 5, the boundaries of mining phases 7 and 8 would be modified and the proposed berm would be modified accordingly. Under this alternative, the impacts on hydrologic resources would be similar in nature to the proposed project. The direct loss of Waters of the US in the upper Quarry watershed would be reduced from 133.63 acres under the proposed project to 122.35 acres and the same mitigation would be required to address this loss.

Land Use and Planning

Both the proposed project and Alternative 5 would be consistent with all applicable land use plans, policies and regulations, would not divide a community either directly or indirectly, and would not conflict with any habitat conservation plans. Alternative 5 would result in similar impacts to land use and planning as compared to the proposed project.

Tribal Cultural Resources

Because the overall footprint of the area to be mined would be reduced, the potential for project activities to inadvertently disturb buried tribal cultural resources would also be reduced. However, the mitigation measures referenced in Section 4.8 would still be required to fully mitigate the project's impacts to tribal cultural resources.

6.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA §15126.6(e)(2) requires that an EIR identify the environmentally superior alternative. CEQA also requires that if the environmentally superior alternative is the No Project Alternative, the EIR must also identify an environmentally superior alternative from the remaining alternatives. In consideration of the alternatives evaluation presented above, Alternative 1: No Project Alternative would result in fewer impacts as compared to the project and the other alternatives considered. This is due to the fact that Well No. 3 would not be constructed, and additional groundwater would not be pumped from the aquifer that underlies the project site. As such, the County must identify the environmentally superior alternative from the remaining alternatives.

Based on the analysis above and excluding the No Project Alternative, the County concludes that Alternative 5, Upper Quarry Watershed Reduced Mining Footprint Alternative, is the environmentally superior alternative as it would result in the greatest reduction of mining volume and duration and would reduce impacts to Waters of the US by 11.28 acres.

The alternatives analysis and conclusions reached regarding the environmentally superior alternative do not determine the ability of Alternative 5 to be an economically viable option for the Applicant.

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7.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires the consideration of a range of additional issues extending beyond analysis of project-specific impacts. This section of the subsequent environmental impact report (SEIR) contains analysis of the following additional CEQA-mandated discussions:

- Mandatory Findings of Significance (Section 15065[a] and Section XXI of the Appendix G of CEQA Guidelines)
- energy consumption and conservation (Section 15126.4[b] and Appendix F of CEQA Guidelines), and
- significant unavoidable adverse impacts (Section 15126. 2[c]),
- irreversible/irretrievable commitment of resources (Section 15126.2[d]),
- growth-inducing impacts (Section 15126.2[e])

7.2 MANDATORY FINDINGS OF SIGNIFICANCE

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact on the CEQA mandatory findings of significance if it would:

a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory;
b) Have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.); or
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Under the *United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement* (2008 EIR/EIS) these impacts were determined to be less than significant. However, as stated in the Initial Study prepared for the project (see Appendix A-1, "Initial Study," of this SEIR) project revisions, changed circumstances, and newly available information, discussed at length in Chapters 4 and 5 of this SEIR, could alter this determination. Each mandatory finding of significance is discussed in detail below.

Impact 7-1: Substantially Degrade the Quality of the Environment, Reduce Habitat of a Fish or Wildlife Species, Cause a Fish or Wildlife Population to Drop Below Self-Sustaining Levels, Threaten to Eliminate a Plant or Animal Community, Substantially Reduce the Number or Restrict the Range of a Rare or Endangered Plant or Animal or Eliminate Important Examples of the Major Periods of California History or Prehistory

Section 4.2, "Biological Resources," of this SEIR evaluates the project's potential impacts to biological resources, including impacts to fish and wildlife populations and movement and impacts to habitats, plant communities, and protected wetlands. The SEIR analysis for this CEQA topic determined that the proposed project would have a less than significant impact on all biological resources with mitigation incorporated. As such, with mitigation incorporated, this impact is also determined to be less than significant with implementation of the mitigation measures referenced below.

Section 4.3, "Cultural Resources," of this SEIR evaluates the project's potential impacts to cultural resources including historical resources. Impact 4.3-1 specifically addresses potential impacts to historical resources. There are two recorded historical resource sites within the project site: (1) the Quarry itself and, (2) the Plaster City Railroad (P-13-008139). These are central components of the Quarry operation that remain in continuous operation, are properly maintained, and would not be adversely affected by project implementation. Similarly, the two prehistoric archaeological resource sites identified within the project site would not be affected by project activities. Existing mitigation measures from both the 2008 EIR/EIS and the 2019 SEIS address the potential for project activities to inadvertently disturb unknown cultural resources. With implementation of these mitigation measures, this impact would be less than significant.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Relevant mitigation measures required to reduce this impact to a less than significant level include the following measures from Section 4.2, "Biological Resources," and Section 4.3, "Cultural Resources," of this SEIR:*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.5-1a*
  - *Mitigation Measure 3.5-1b*
  - *Mitigation Measure 3.5-1c*
  - *Mitigation Measure 3.5-1d*
  - *Mitigation Measure 3.5-1e*
  - *Mitigation Measure 3.5-1f*
  - *Mitigation Measure 3.5-2*
  - *Mitigation Measure 3.8-3*
- *2019 SEIS:*
  - *Mitigation Measure 3.4-5*
  - *Mitigation Measure 3.4-6*
  - *Mitigation Measure 3.4-7*

- *Mitigation Measure 3.4-8*
- *Mitigation Measure 3.4-9*
- *Mitigation Measure 3.4-10*
- *Mitigation Measure 3.4-11*
- *Mitigation Measure 3.4-12*
- *Mitigation Measure 3.4-13*
- *Mitigation Measure 3.6-1*
- *Mitigation Measure 3.6-2*

Level of Significance After Mitigation: Less than significant.

Impact 7-2: Impacts that are Individually Limited but Cumulatively Considerable

Chapter 5 of this SEIR provides an evaluation of the project's potential to result in impacts that are cumulatively considerable. This evaluation determined that, with implementation of the mitigation measures provided in this SEIR, the project would not result in any impacts which are cumulatively considerable. Therefore, this impact would be less than significant.

Level of Significance Before Mitigation: Less than significant.

Mitigation Measure: None required.

Level of Significance After Mitigation: Less than significant.

Impact 7-3: Environmental Effects which will Cause Substantial Adverse Effects on Human Beings

Under CEQA, a change to the physical environment that might otherwise be minor must be treated as significant if people will be significantly affected. This factor relates to adverse changes to the environment of human beings generally, and not to effects on particular individuals. While changes to the environment that could indirectly affect human beings will be represented by all of the designated CEQA issue areas, those that could directly affect human beings include aesthetics, air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, transportation/traffic, and utilities, which are addressed in this SEIR and the Initial Study (see Appendix A-1).

As discussed throughout Chapter 4 of this SEIR, the project would not result in any significant impacts which cannot be mitigated. The topics of aesthetics, geology and soils, hazards and hazardous materials, noise, population and housing, public services, transportation/traffic, and utilities were determined to be less than significant in the Initial Study and were not evaluated further in the SEIR. Project impacts to air quality are addressed in Section 4.1, "Air Quality," of this SEIS. With implementation of both existing and newly proposed mitigation measures, each air quality impact was determined to be less than significant. In particular, emissions of fugitive dust (Impact 4.1-2) and odorous emissions (Impact 4.1-4), which can create a nuisance to the public, would be less than significant. Furthermore, the project site is located in a rural area composed primarily of open space with few inhabitants. Given the site's distance from established communities and residential uses, the project would have limited potential to adversely affect human beings. With implementation of the mitigation measures listed below, this impact would be less than significant.

Level of Significance Before Mitigation: Potentially Significant.

Mitigation Measures: *Implement the following existing and newly proposed mitigation measures:*

- *2008 EIR/EIS:*
  - *Mitigation Measure 3.6-1a*
  - *Mitigation Measure 3.6-1b*
  - *Mitigation Measure 3.6-1c*
- *SEIR Section 4.1:*
  - *Mitigation Measure 4.1-1a*
  - *Mitigation Measure 4.1-1b*

Level of Significance After Mitigation: Less than Significant.

7.3 ENERGY CONSUMPTION AND CONSERVATION

CEQA requires an environmental impact report to include a discussion of mitigation measures to minimize significant effects on the environment relating to “wasteful, inefficient, and unnecessary consumption of energy” (PRC Section 21100[b][3]). Appendix F of the CEQA Guidelines provides guidance for analyzing energy impacts in an EIR, but neither Appendix F itself, nor any authority, requires that an EIR discuss every possible energy impact or conservation measure listed in Appendix F. Energy impacts need only be discussed “to the extent relevant and applicable to the project” (CEQA Guidelines Appendix F, Section II).

Appendix F states that “the goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on fossil fuels such as coal, natural gas and oil, and (3) increasing reliance on renewable energy sources” (CEQA Guidelines Appendix F, Section I). In addition, factors suggested in Appendix F for determining and mitigating potentially significant energy impacts may be relevant to this project’s fuel usage and energy consumption. These factors are discussed herein, where relevant, for mobile equipment `and electric utility service used by the project.

The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, would be substantially in the same locations and same configurations as the features that were evaluated in the 2008 EIR/EIS. The project would not change proposed Quarry operations and would not result in an increase in energy use for transportation purposes or operation of mining equipment or facilities.

Construction of the proposed well and pipeline and restoration of the Viking Ranch site would temporarily consume energy sources for operation of heavy off-road equipment, trucks, and worker and vendor traffic. The emissions for these activities are included in Appendix C-2 and C-3 of this SEIR. Once construction is completed, well operation would require ongoing energy use. The use of solar panels to power the well is not feasible due to the high potential for vandalism of such facilities in the project area. Upon completion of restoration activities at the Viking Ranch site, energy use would be limited to occasional truck trips for maintenance activities. Similarly, the Old Kane Springs Road site would require a negligible amount of fossil fuel energy for maintenance truck trips.

The project would have limited energy needs and would not result in the wasteful or inefficient use of energy resources.

7.4 SIGNIFICANT ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

CEQA Guidelines Section 15126.2(c) requires that the EIR discuss significant environmental effect that cannot be avoided if the project is implemented, even with mitigation incorporated. According to Guidelines Section 15126(c):

> Describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.

As determined in Chapter 4 of this SEIR, the proposed project would not result in any significant and unavoidable impacts.

7.5 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES THAT WOULD BE CAUSED BY THE PROJECT SHOULD IT BE IMPLEMENTED

Public Resources Code Section 21100(b)(2)(B) and CEQA Guidelines Section 15126.2(d) require that the EIR discuss significant irreversible environmental changes that would be caused by the project should it be implemented. According to Guidelines Section 15126(d):

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

The proposed project was analyzed in the 2008 EIR/EIS for its potential to cause an irreversible or irretrievable commitment of resources. That analysis indicated that the project would commit the use of nonrenewable energy sources for quarrying, mineral resources extracted, water used at the Quarry, and emissions into the air. This section addresses new information available since publication of the 2008 EIR/EIS, new effects of the proposed project may have on these resources within the affected environment, and any effects that were not analyzed in the 2008 EIR/EIS.

A commitment of a resource is considered irreversible when the primary or secondary impacts from its use limit the future options for its use. An irretrievable commitment refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. The use of nonrenewable resources such as metal, wood, fuel, paper, aggregate and other natural resources such as gypsum ore is considered irretrievable in that they would be used for a certain purpose when they could have been conserved or used for other purposes. This section also considers whether the potential long-term or permanent effects of the project represent the irretrievable or irreversible commitment of waters of the United States and Peninsular bighorn sheep (PBS) critical habitat.

Gypsum Resources: The quarrying activities associated with the proposed project would irreversibly commit nonrenewable gypsum resources. Approximately 140 million tons of gypsum ore would be mined over the projected life of the mine, assuming that mining continues at the maximum rate authorized under the current air quality permit. However, the gypsum is privately owned, and would not have been conserved or used for any other purposes.

Waters of the United States: The proposed project would result in permanent losses to waters of the United States in the Quarry, and both temporary and permanent impacts along the proposed pipeline alignments as described in Section 4.2 of this document. These impacts would be minimized or avoided through measures described in Section 4.2. Implementation of mitigation required in permits obtained for the project, including permits required under Sections 401 and 404 of the Clean Water Act would reduce the project’s impacts on jurisdictional waters both during and after the life of the project. Reclamation in the Quarry and at the site of Well No. 3 and associated pipeline would ensure that the functionality of these waters of the United States would continue after each quarrying phase is completed and at the end of the project life. See also Chapter 4, “Project Alternative,” which provides an evaluation of four alternatives that would modify or eliminate proposed mining phases in order to avoid impacts to waters of the US.

Peninsular Bighorn Sheep Designated Critical Habitat: The proposed project would affect critical habitat for PBS as described in Section 4.2. The analysis of impacts indicated that the amount of critical habitat impacted by the project would be small compared with the designated critical habitat in Recovery Region 8, identified by the USFWS in the PBS Recovery Plan. Further, the majority of the critical habitat in Recovery Region 8 is either in BLM wilderness or within Anza Borrego State Park and is well protected. The impacts of the proposed project on PBS critical habitat within the mine boundaries is not considered irreversible because the project would restore and revegetate the mine areas after mining operations are complete. Other minimization measures include habitat restoration and revegetation; critical habitat acquisition, preservation, and replacement; monitoring by qualified biologists; preconstruction surveys and relocation of certain special status species out of harm’s way; and supporting CDFW’s monitoring of specific PBS populations. Critical habitat on public lands affected by the project would be replaced subject to review and approval by the BLM and the USFWS.

Other Resources: The operations conducted under the proposed project would consume oil, gasoline, natural gas, diesel, water, and other nonrenewable resources for equipment and other needs. Table 7-1 below shows the rate at which these non-renewable resources were used in the one-year period between 2017 and 2018, according to USG’s records, and projects the consumption of these resources for the life of the quarry beyond 2018, assuming 140 million tons of gypsum would be mined. At the conclusion of mining operations, the Quarry and the pipeline rights-of-way would be reclaimed and revegetated allowing the potential for re-use of the land, and no further demand for non-renewable resources would occur with respect to the proposed project.

Table 7-1
Projected Use of Non-Renewable Resources for USG Expansion Project

Non-Renewable Resource	2017-18 Annual Use for Total Gypsum Mined/Processed (0.78 mt)	Use/Ton	Project Total Use Over Life of Gypsum Reserve (Beginning 2018-19) Total (140 mt)
Grease	4,000 gallons	0.005 gallons	700,000 gallons
Oil	6,247 gallons	0.008 gallons	1,120,000 gallons
Diesel Fuel	129,524 gallons	0.166 gallons	23,240,000 gallons
Gasoline	8,156 gallons	0.010 gallons	1,400,000 gallons
Electricity	38,808,306 KWh	49.754 KWh	6,965,560,000 KWh
Natural Gas	1,393,600 Btu	1.786 Btu	250,040,000 Btu
Propane	77,948 gallons	0.099 gallons	13,860,000 gallons

Source: BLM 2019

7.6 GROWTH INDUCING ANALYSIS OVERVIEW

Public Resources Code (PRC) Section 21100(b)(5) specifies that an EIR must address a project's growth inducing impacts. CEQA Guidelines Section 15126.2(d) requires that the scope of the analysis "discuss the ways in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

The effect of the proposed project on factors inducing growth were analyzed in Section 4.4 (Growth Inducing Impacts) of the 2006 Draft EIR/EIS. This section addresses the impacts of the proposed project on growth inducement in the affected environment that have changed or were not analyzed in the previous document.

Typically, the growth inducing potential of a project would be considered significant if it would foster growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if a project would provide the infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies. Increased development and growth in an area depend on a variety of factors, including employment and other opportunities. Increased production at the Plant could occur if the rate of quarrying were expanded to meet future market demands. USG estimates that it could increase employment at the Plant by up to 140 people, likely from the Ocotillo and El Centro region. The increase represents 0.01% of the total El Centro/Ocotillo regional employment base from which the additional employees are expected to be drawn. New employees hired from within the region likely would not relocate for employment. However, housing is available in the El Centro market area to accommodate the increase. The addition of 140 employees would also create a small, secondary effect on the local economy such as increased commerce and consumer spending in local communities, proportional to the increase in USG employment. Most of the economic effects are expected to occur within the El Centro Region because of its proximity to the project. The likelihood that new employees would come from within the same region as the project suggests that the increase in employment would be neutral with respect to the potential for inducing growth in the area. The infrastructure and facility improvements related to the project would be privately owned by USG and designed specifically to meet the needs of the Quarry and Plant. They would not be available for use by other developers. Therefore, the project would not induce the development of additional housing or other developments that would rely on new utility services. Access to the area associated with the proposed project already exists; the project would not create new access into areas previously inaccessible for development. The project would not result in direct inducement for population growth, nor would it result in changes to land use designations or utility infrastructure necessary for other developments to induce population growth.

Furthermore, restoration and preservation of the offsite mitigation sites would not induce growth as no development would occur. On the contrary, the sites would be permanently preserved as open space eliminating the potential for growth on the sites in the future.

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LIST OF PREPARERS

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REFERENCE AND RESOURCES

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CHAPTER 9:
REFERENCES AND RESOURCES

EXECUTIVE SUMMARY

No references.

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No references.

CHAPTER 7, “OTHER CEQA TOPICS”

No references.

CHAPTER 8, “LIST OF PREPARERS”

No references.

CHAPTER 9, “REFERENCES AND RESOURCES”

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CHAPTER 10, “ACRONYMS”

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CHAPTER 10: ACRONYMS

ACHP	Advisory Council on Historic Preservation
ACOE	Army Corps of Engineers
AB	assembly bill
AF/yr	acre-feet per year
AF	acre-feet
APE	area of potential effect
APN	Assessor Parcel Number
ARB	air resources board
ATCM	Airborne Toxic Control Measure
BACT	best available control technology
BAU	business as usual
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	best management practices
BO	biological opinion
CAAQS	California ambient air quality standards
CAFÉ	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act of 1988
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game (former)
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	White House Council on Environmental Quality

CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
County	Imperial County
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CRR	cultural resources report
CUP	conditional use permit
CWA	Clean Water Act
DEIR	draft environmental impact report
DO	dissolved oxygen
DOC	California Department of Conservation
DPW	Imperial County Department of Public Works
DWR	California Department of Water Resources
EDR	Environmental Data Resources
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	Emission Factor Model
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
ESA	environmental site assessment

°F	Fahrenheit
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIRM	flood insurance rate map
FMP	flood management plan
ft/s	feet per second
FTHL	flat-tailed horned lizard
GHG	greenhouse gases
GIS	geographic information system
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
gpd	gallons per day
gpm	gallons per minute
GVWR	Gross Vehicle Weight Rating
GWP	global warming potential
H_2O	water vapor
HA	hydrologic area
HCP	Habitat Conservation Plan
HDPE	high-density polyethylene pipe
HEC-RAS	Hydrologic Engineering Centers River Analysis System
HFCs	Hydrofluorocarbons
HMMP	Habitat Mitigation and Monitoring Plan
hp	horsepower
HRA	health risk assessment
HA	hydrologic unit
ICAPCD	Imperial County Air Pollution Control District
in/sec	inches per second
IPaC	Information for Planning and Conservation
IS/MND	Initial Study/Mitigated Negative Declaration
IPCC	Intergovernmental Panel on Climate Change

Lb/day	Pounds per day
LCFS	Low Carbon Fuel Standard
LDAMDV	light duty auto – medium duty vehicle
Ldn	day-night noise level (also DNL)
Leq	equivalent noise level
LEV	low-emission vehicle
LUP	linear utility project
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mL/hr	milliliters per hour
MMRP	mitigation monitoring and reporting plan
MMT	million metric tons
$MMTCO_2E$	million metric tons of CO_{2E}
mph	miles per hour
MRZs	Mineral Resource Zones
msl	mean sea level
MT	million tons
MTC	Metropolitan Transportation Commission
MW	megawatts
N	Nitrate
NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Academy of Sciences
NCDC	National Climatic Data Center
ND	negative declaration
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NF_3	nitrogen trifluoride
NHTSA	Department of Transportation's National Highway Traffic Safety Administration

NOI	Notice of Intent
NRHP	National Register of Historic Places
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NOC	notice of completion
NO	nitric oxide
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Imperial County Office of Emergency Services
OHWM	ordinary high water mark
ONRW	Outstanding National Resource Waters
OPR	Governor’s Office of Planning and Research
OSHA	U.S. Department of Labor Occupational Safety and Health Administration
PBS	Peninsular bighorn sheep
PFCs	perfluorocarbons
PFYC	Potential Fossil Yield Classification
PG&E	Pacific Gas and Electric Company
PM_{10}	respirable particulate matter
$PM_{2.5}$	particulate matter
ppm	parts per million
PRC	Public Resources Code
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PSD	prevention of significant deterioration
PV	photovoltaic

QSP	qualified SWPPP practitioner
RAQS	Regional Air Quality Strategy
ROG	reactive organic gases
ROW	right of way
RPO	Resource Protection Ordinance
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SCS	sustainable communities strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SEIR	subsequent environmental impact report
SEIS	Subsequent environmental impact statement
SF_6	hexafluoride
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMO	surface mining ordinance
SMP	surface mining permit
SO_2	sulfur dioxide
SO_x	sulfur oxides
SR	State Route
SSAB	Salton Sea Air Basin
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCR	tribal cultural resources
TDS	total dissolved solids
TMDL	total maximum daily load
tpy	tons per year

VOC	volatile organic compounds
UBC	Uniform Building Code of 1997
USBR	U.S. Bureau of Reclamation
USDA	United States Department of Agriculture
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USG	United States Gypsum
USGS	U.S. Geological Survey
VDECS	Verified Diesel Emission Control Strategies
WEAP	worker education awareness program
WDR	Waste Discharge Requirement
WMMA	West Mesa Management Area
WSA	Water Supply Assessment
yr	year

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USG PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

CUP APPLICATION 20-0016

INITIAL STUDY IS 22-0021

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

VOLUME II: APPENDICES

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APRIL 2023

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INITIAL STUDY

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INITIAL STUDY & ENVIRONMENTAL ANALYSIS FOR:

USG PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

CUP APPLICATION 20-0016

INITIAL STUDY IS 22-0021

Prepared By:

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JULY 2022

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I. INTRODUCTION

A. PURPOSE

This document is a ☐ policy-level, ☒ project level Initial Study for evaluation of potential environmental impacts resulting from the proposed USG Plaster City Quarry Expansion and Well No. 3 Project (Refer to Figure 1, “Regional Location,” Figure 2, “Plaster City Quarry and Well No. 3 Location,” Figure 3, “Viking Ranch Restoration Site”, and Figure 4, “Old Kane Springs Road Preservation Site”).

B. CALIFORNIA ENVIRONMENTAL QUALITY ACT (REQUIREMENTS AND THE IMPERIAL COUNTY’S GUIDELINES FOR IMPLEMENTING CEQA

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines and Section 7 of the County’s “CEQA Regulations Guidelines for the Implementation of CEQA, as amended”, an **Initial Study** is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

According to Section 15065, an **EIR** is deemed appropriate for a particular proposal if the following conditions occur:

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

This Initial Study has determined that the proposed applications could result in **potentially significant environmental impacts** and therefore, a **Supplemental EIR** is deemed as the appropriate document to provide necessary environmental evaluations and clearance as identified hereinafter.

This Initial Study has been prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); Section 15070 of the State & County of Imperial’s Guidelines for Implementation of the California Environmental Quality Act of 1970, as amended (California Code of Regulations, Title 14, Chapter 3, Section 15000, et. seq.); applicable requirements of the County of Imperial; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to the County of Imperial Guidelines for Implementing CEQA, depending on the project scope, the County of Imperial Board of Supervisors, Planning Commission and/or Planning Director is designated the Lead Agency, in accordance with Section 15050 of the CEQA Guidelines. The Lead Agency is the public agency which has the principal responsibility for approving the necessary environmental clearances and analyses for any project in the County.

C. INTENDED USES OF INITIAL STUDY

This Initial Study is an informational document which is intended to inform County of Imperial decision makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed applications. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals.

D. CONTENTS OF INITIAL STUDY

This Initial Study is organized to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

I. **Introduction** presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

II. **Environmental Checklist Form** contains the County's Environmental Checklist Form. The checklist form presents results of the environmental evaluation for the proposed applications and those issue areas that would have either a potentially significant impact, potentially significant unless mitigation incorporated, less than significant impact or no impact.

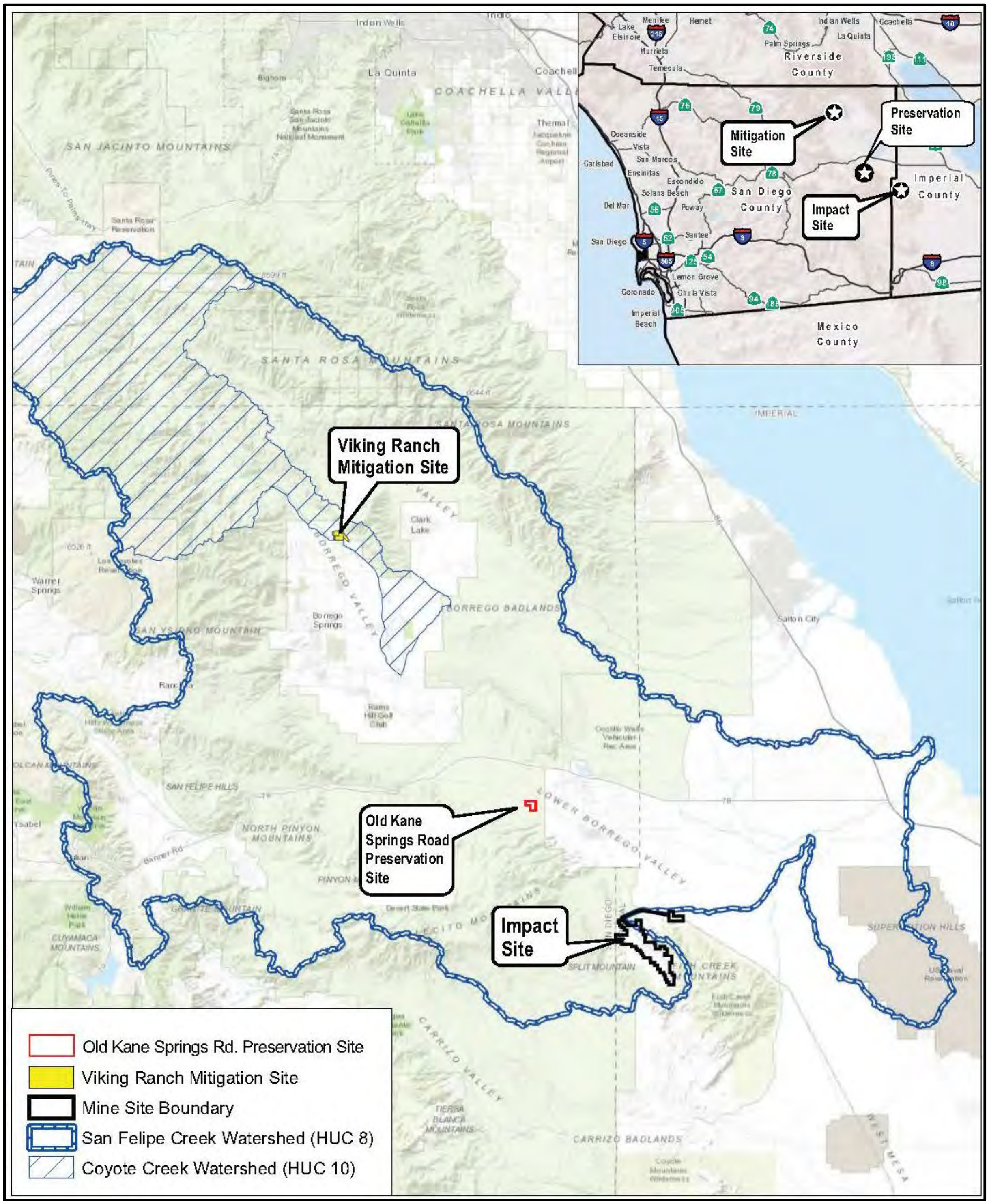
III. **Project Summary, Location and Environmental Settings** describes the proposed project entitlements and required applications. A description of discretionary approvals and permits required for project implementation is also included. It also identifies the location of the project and a general description of the surrounding environmental settings.

IV. **Evaluation of Environmental Impacts** evaluates each response provided in the environmental checklist form. Each response checked in the checklist form is discussed and supported with sufficient data and analysis as necessary. As appropriate, each response discussion describes and identifies specific impacts anticipated with project implementation.

V. **Mandatory Findings** presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

VI. **Persons And Organizations Consulted** identifies those persons consulted and involved in preparation of this Initial Study.

VII. **References** lists bibliographical materials used in preparation of this document.



SOURCE: Dudek, 2021; Basemap USGS

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Figure 1
Regional Location

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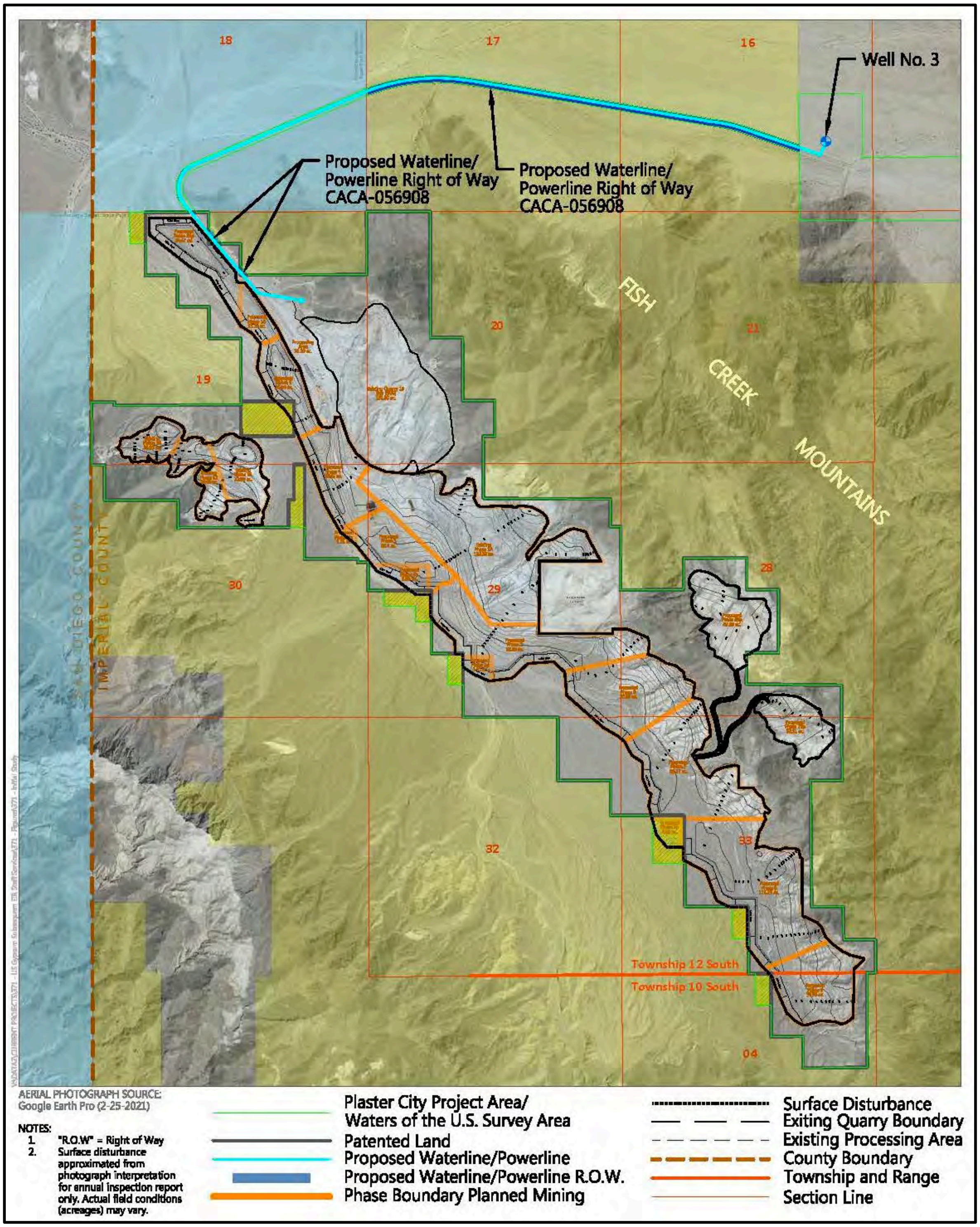

SOURCE: Benchmark Resources, 2021

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Figure 2
Plaster City Quarry and Well No. 3 Location

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SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2018

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Figure 3
Viking Ranch Restoration Site

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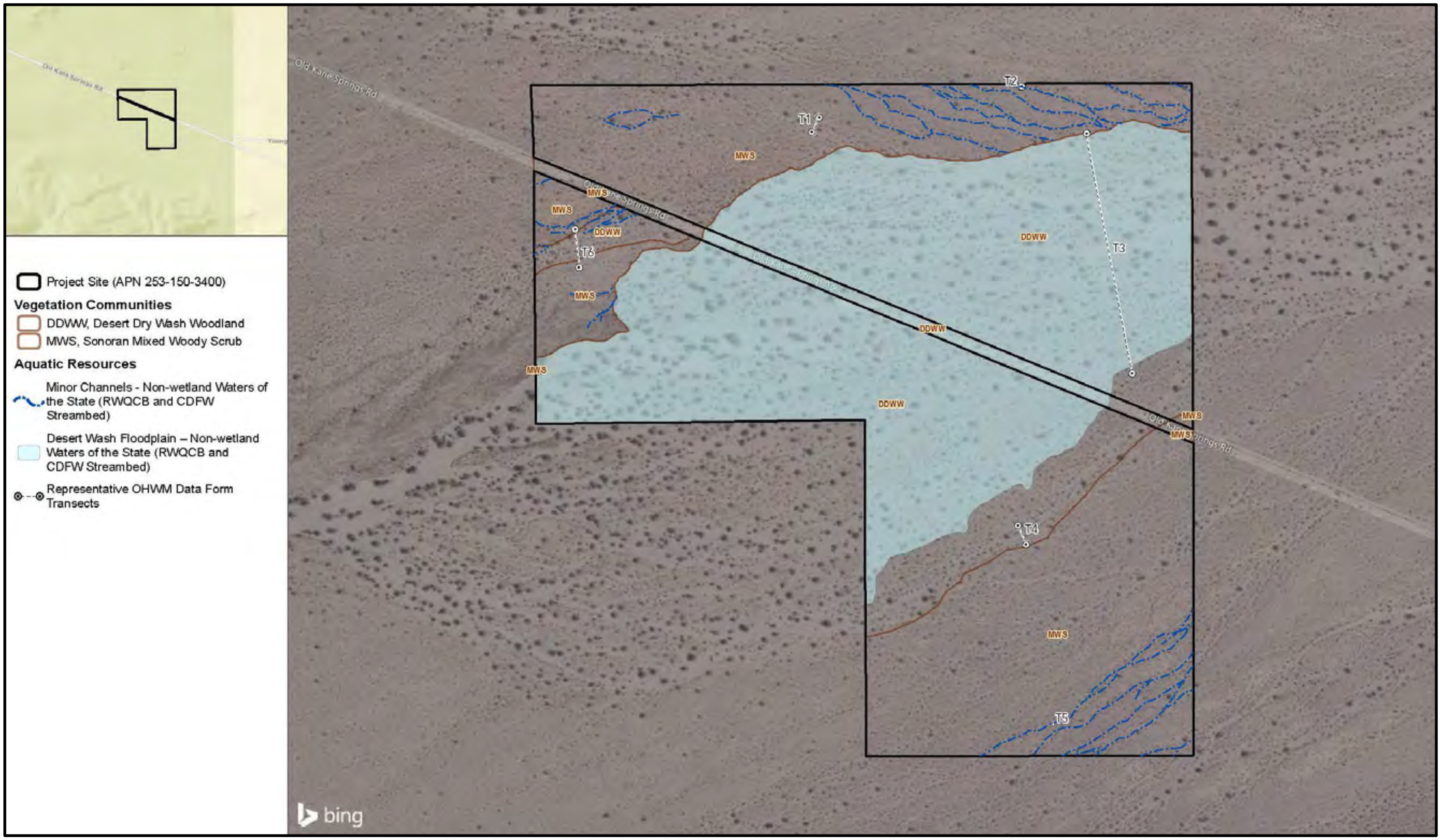

SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2020

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Figure 4
Old Kane Springs Road Preservation Site

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E. SCOPE OF ENVIRONMENTAL ANALYSIS

For evaluation of environmental impacts, each question from the Environmental Checklist Form is summarized and responses are provided according to the analysis undertaken as part of the Initial Study. Impacts and effects will be evaluated and quantified, when appropriate. To each question, there are four possible responses, including:

No Impact: A "No Impact" response is adequately supported if the impact simply does not apply to the proposed applications.

Less Than Significant Impact: The proposed applications will have the potential to impact the environment. These impacts, however, will be less than significant; no additional analysis is required.

Potentially Significant Unless Mitigation Incorporated: This applies where incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".

Potentially Significant Impact: The proposed applications could have impacts that are considered significant. Additional analyses and possibly an EIR could be required to identify mitigation measures that could reduce these impacts to less than significant levels.

F. POLICY-LEVEL OR PROJECT LEVEL ENVIRONMENTAL ANALYSIS

This Initial Study will be conducted under a ☐ **policy-level**, ☒ **project level analysis**. Regarding mitigation measures, it is not the intent of this document to "overlap" or restate conditions of approval that are commonly established for future known projects or the proposed applications. Additionally, those other standard requirements and regulations that any development must comply with, that are outside the County's jurisdiction, are also not considered mitigation measures and therefore, will not be identified in this document.

G. TIERED DOCUMENTS AND INCORPORATION BY REFERENCE

Information, findings, and conclusions contained in this document are based on incorporation by reference of tiered documentation, which are discussed in the following section.

1. **Tiered Documents:** As permitted in Section 15152(a) of the CEQA Guidelines, information and discussions from other documents can be included into this document. Tiering is defined as follows:

> "Tiering refers to using the analysis of general matters contained in a broader EIR (such as the one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project."

Tiering also allows this document to comply with Section 15152(b) of the CEQA Guidelines, which discourages redundant analyses, as follows:

> "Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including the general plans, zoning changes, and development projects. This

> approach can eliminate repetitive discussion of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration."

Further, Section 15152(d) of the CEQA Guidelines states:

> "Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to effects which:
>
> a) Were not examined as significant effects on the environment in the prior EIR; or
> b) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means."

2. Incorporation By Reference: Incorporation by reference is a procedure for reducing the size of EIRs/MND and is most appropriate for including long, descriptive, or technical materials that provide general background information, but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or Negative Declaration relies on a broadly-drafted EIR for its evaluation of cumulative impacts of related projects (*Las Virgenes Homeowners Federation v. County of Los Angeles* [1986, 177 Ca.3d 300]). If an EIR or Negative Declaration relies on information from a supporting study that is available to the public, the EIR or Negative Declaration cannot be deemed unsupported by evidence or analysis (*San Francisco Ecology Center v. City and County of San Francisco* [1975, 48 Ca. 3d 584, 595]). This document incorporates by reference appropriate information from the "Final Environmental Impact Report and Environmental Assessment for the "County of Imperial General Plan EIR" prepared by Brian F. Mooney Associates in 1993 and updates.

   When an EIR or Negative Declaration incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

   - The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines Section 15150[a]). The General Plan EIR and updates are available, along with this document, at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.
   - This document must be available for inspection by the public at an office of the lead agency (CEQA Guidelines Section 15150[b]). These documents are available at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.
   - These documents must summarize the portion of the document being incorporated by reference or briefly describe information that cannot be summarized. Furthermore, these documents must describe the relationship between the incorporated information and the analysis in the tiered documents (CEQA Guidelines Section 15150[c]). As discussed above, the tiered EIRs address the entire project site and provide background and inventory

information and data which apply to the project site. Incorporated information and/or data will be cited in the appropriate sections.

- These documents must include the State identification number of the incorporated documents (CEQA Guidelines Section 15150[d]). The State Clearinghouse Number for the County of Imperial General Plan EIR is SCH #93011023.
- The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150[f]). This has been previously discussed in this document.

II. ENVIRONMENTAL CHECKLIST FORM

1. **Project Title**: USG Plaster City Quarry Expansion and Well No. 3 Project

2. **Lead Agency**: Imperial County Planning & Development Services Department

3. **Contact Person and Phone Number**: Patricia Valenzuela, Planner IV, 442-265-1749

4. **Address**: 801 Main Street, El Centro CA, 92243

5. **E-mail**: PatriciaValenzuela@co.imperial.ca.us

6. **Project Location**: The USG Plaster City Quarry (included the expansion area) is located in Imperial County on USG-owned property (2,032 acres) and on active unpatented mill site claims on BLM-administered public lands (73 acres) (Assessor Parcel Numbers [APNs] 033-060-09; 033-070-01, -04, -05, -08, -10, -11, -17, and -23; 033-080-05; 033-090-11, -12, -13, -14, and -15). It is located within portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 09 East of the San Bernardino Meridian (SBM).

   The proposed United States Gypsum (USG) Quarry Well No. 3 is located in Imperial County on USG-owned property APN 033-020-009. It is located within Section 16 of Township 13 South, Range 09 East SBM.

   The proposed pipeline alignment is located in Imperial County within USG-owned property (APNs 033-020-009; 033-060-010 and -008); land owned by the U.S. Bureau of Land Management (BLM) (APNs 033-010-025 and -017; and 033-060-012); and within Anza-Borrego Desert State Park (APN 033-010-016). The pipeline crosses Sections 16, 17, 18, and 19 of Township 13 South, Range 09 East SBM.

   The Viking Ranch restoration site is located in San Diego County and consists of approximately 150 acres of Borrego Water District-owned property (APNs 140-030-09-00 and -11-00); approximately 10 acres of privately owned property (APN 140-030-10-00); and approximately 47 acres of lands adjacent to these parcels that would be enhanced. The adjacent lands consist of approximately 13 acres of land owned by the Anza-Borrego Foundation (APN 140-030-05-00), approximately 3 acres of State Park owned land to the north of the restoration site and approximately 31 acres of State Park owned lands to the east of the restoration site (APN 140-030-07-00). The restoration site is located in the southeast corner of Section 4 of Township 10 South, Range 06 East SBM.

   The approximately 121-acre Old Kane Springs Road preservation site is located in San Diego County on privately-owned property (APN 253-150-34-00). The mitigation site is located in Section 18 of Township 12 South, Range 08 East SBM.

7. **Project Sponsor's Name and Address**: United States Gypsum Company, 3810 West Evan Hewes Highway, Imperial, California 92251

8. **General Plan Designation**: The Quarry (including the expansion area) is designated as Recreation/Open Space.

Well No. 3 is located in an area designated as Recreation/Open Space.

Approximately, 2.5 miles of the pipeline alignment is located in areas designated as Recreation/Open Space. The remaining 1 mile of the pipeline alignment is located in areas designated Government/Special Public; this segment is part of the Anza-Borrego Desert State Park.

The Viking Ranch restoration site is designated Semi-Rural Residential (SR-4) and the Old Kane Springs Road preservation site is designated Rural Lands (RL-40) in the San Diego County General Plan.

9. Zoning: The Quarry parcels (including the expansion area) are zoned either S-2 (Open Space/Preservation) or BLM.

The Well No. 3 parcel is zoned S-2 (Open Space/Preservation).

The pipeline alignment parcels are generally zoned S-2 (Open Space/Preservation) with one parcel zoned STATE (APN 033-010-016).

The Viking Ranch restoration site and Old Kane Spring Road preservation site parcels are zoned General Rural (S92) in San Diego County.

10. Description of Project:

PROJECT OVERVIEW

The proposed project consists of approval of a Conditional Use Permit from the County of Imperial (County) for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the United States Gypsum (USG) Plaster City Quarry (Quarry). The locations of the Quarry, Well No. 3, and the associated pipeline are shown on Figure 1, and Figure 2. Together, these three project components are referred to as the “project area”.

Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this Initial Study will evaluate potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

This Initial Study will also evaluate potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Dudek 2022). As described under the “Previous EIR/EIS” section below, USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of water of the United States at the Quarry. The locations of these sites are shown on Figures 1, 3, and 4. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this Initial Study will evaluate the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

PREVIOUS EIR/EIS

The development of Well No. 3, the associated pipeline, and the long-term operation and reclamation of the Quarry were part of United States Gypsum Company Expansion/Modernization Project (USG Expansion/Modernization Project) that was evaluated in a 2006 Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) (2006 Draft EIR/EIS) and a 2008 Final EIR/EIS. Together, the two documents are referred to in this Initial Study as the “2008 EIR/EIS”.

The USG Expansion/Modernization Project included development of Well No. 3 and an associated pipeline, expansion of the existing Quarry, replacement of an existing 8-inch diameter water pipeline from USG’s wells in Ocotillo to the Plaster City Plant (Plant), installation of an approximately 14.4-megawatt (MW) cogeneration unit for the Plant operation, and construction of an off-specification material recycling system. A Draft EIR/EIS was completed for the project in April 2006 (2006 Draft EIR/EIS). On March 18, 2008, the Final EIR/EIS was certified by the Imperial County Board of Supervisors (Board) pursuant to the requirements of CEQA (SCH 200121133). As such, the potential environmental impacts of proposed Quarry expansion and reclamation and development of Quarry Well No. 3 were previously evaluated in the 2008 EIR/EIS.

In addition to the 2008 EIR/EIS, additional analysis of the USG Expansion/Modernization Project was completed under NEPA as part of the process of obtaining the federal approvals required for the Quarry expansion. The NEPA process resulted in the completion of a Draft Supplemental EIS (SEIS) in June 2019 and a Final SEIS in November 2019 for the USG Expansion/Modernization Project. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of water of the United States at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 207-acre area at the Viking Ranch restoration site and the preservation of approximately 121 acres at the Old Kane Springs Road preservation site. The sites are shown on Figures 1, 3, and 4. These mitigation locations are within the San Felipe Creek watershed, which is the same parent watershed as the impacted aquatic resources at the Quarry.

PROJECT PURPOSE AND NEED

The proposed Well No. 3 and associated pipeline were approved under an existing County Conditional Use permit (CUP) CUP-08-0003, “US Gypsum water well for Quarry Expansion Project, Assessor’s Parcel Number APN 033-020-009,” which was approved by the Imperial County Board of Supervisors on March 18, 2008. However, USG did not initiate or obtain construction permits for Quarry Well No. 3 within the time period set forth in Imperial County Code Section 90203.13. Therefore, CUP-08-0003 has expired.

The location and characteristics of the proposed Quarry Well No. 3 and associated pipeline have not changed since the USG Expansion/Modernization Project was approved in 2008 and remain as described in the original application for CUP-08-0003 and in the associated 2008 EIR/EIS. The proposed well and associated facilities request has not changed since approval in 2008. Therefore, the CUP requested under the proposed project would essentially replace CUP-08-0003.

Although no entitlements are required from Imperial County for the Quarry expansion and Viking Ranch restoration or preservation off the Old Kane Springs Road site, this Initial Study will evaluate potential environmental impacts associated with mining and reclamation activities under the Quarry expansion and with the associated restoration and preservation actions, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

PROJECT OBJECTIVES

The objectives of the proposed project are as follows:

- Secure permits and approvals to continue and fully develop quarrying gypsum reserves;
- Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
- Meet market demands for gypsum products;
- Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
- Concurrently reclaim Quarry site for post-mining uses as Open Space;
- Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
- Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter Cologne Act.

PROJECT COMPONENTS

Plaster City Quarry Expansion

The Quarry expansion component of the USG Expansion/Modernization Project consists of the following:

- Improvements already made to the crushing and loading facilities (i.e., development of a new crusher building and extension to the existing rock storage building to allow additional hopper cards to be loaded).
- Adoption of a long-term mining and reclamation plan for the extent of USG's mineral holdings.

Overview of Quarry Operation and Production

The quarry operations are designed to quarry, crush, screen, and ship material via narrow-gauge rail to the Plant for finish processing and via truck for agricultural and Portland cement manufacturing uses. The existing Quarry processing facility would not be expanded beyond the existing improvements already made. Haul road alignments would be changed to accommodate individual quarrying in various areas, and the rail facility and access road would be maintained. Quarry access would regularly change as the individual quarries expand. All service and haul roads would be retained within the Quarry footprint. Equipment parking and storage areas at the Quarry would be on absorbent pads over a plastic membrane to keep fluids from passing through it to the soil below. Access roads outside the mining footprint, but within the Quarry boundary, would be maintained in place once established as identified in the Reclamation Plan.

Proposed Quarry operations are approved to produce up to 1.92 million tons of gypsum per year. At this rate of production, the number of train trips between the Quarry and the Plant could reach about 1,800 round trips per year.

Summary of Approved 2003 Mine Reclamation Plan

The 2003 *Mine Reclamation Plan* consists of a multi-phased plan that would systematically quarry and process up to the rate authorized in USG's current air quality permit, approximately 1.92 million tons of gypsum annually. The *Mine Reclamation Plan* is divided into phases based on current geological data, quantity and quality of gypsum, market demand and proximity to the existing Plant. Each phase has been numbered for purposes of identification. Figure 2 shows the proposed phasing. At maximum production rates, the known reserves would provide in excess of 80 years of production.

Two types of quarrying are proposed: outcrop quarrying and alluvial wash quarrying. The two methods of quarrying are described below.

> *Outcrop Quarrying.* The areas of current production are designated as Quarry 1A and Shoveler. These areas consist of outcrops of gypsum above the level of the alluvial wash. Under the Proposed Action, production would continue with the extension and development of benches with a height of 25 feet. The final configuration of the benches would be based upon: (1) the contact with underlying low-purity gypsum, anhydrite, arkose, or granite; and (2) the up-dip limit of the outcrops. Quarry development would progress to each of the additional phases beginning with Phase 2, then proceeding both north and south into adjacent phases based on proximity and gypsum quality. As previously indicated, overburden on these outcrops is almost nonexistent. When surface clays are encountered, they would be removed for use in reclaiming previously mined outcrops.
>
> *Alluvial Wash Quarrying.* Under the USG Modification/Expansion Project, quarrying would extend north to south. Quarrying of the alluvial wash deposits would progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the gypsum would progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached. The depth of each Quarry phase would vary based on the bottom limit of gypsum.

An earthen berm would be constructed along the west side of the Quarry to divert natural surface water flows toward Fish Creek Wash and away from the Quarry operations. The design was based on a hydrology study and drainage analysis (Joseph E. Bonadiman & Associates Inc. 2004). The berm would be constructed of overburden material from various gypsum mining phases, or portions of phases, in the alluvial wash stripped to expose the gypsum. As overburden is stripped, a portion would be pushed to the east bank of the wash and the furthest southern limits of the planned disturbance to form the berm. Another berm consisting of the top 1 foot of surface alluvium would be pushed over the west Quarry slopes and used as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time but would typically be pushed into the adjoining mined out areas for reclamation of the slopes such that overburden from Phase 3 would be used in Phase 2, overburden from Phase 4 would be used in Phase 3, and so forth. At end of the quarry life, all berms will have been used for Reclamation.

Quarry Reclamation Techniques

Where feasible, reclamation would occur concurrently during mining operations. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. The steepest portion of the hillside quarries would be sloped no steeper than 1H:1V slopes and about 100 feet high. The site access on the north would remain gated. The privately held lands would not be open to public recreational use. The benched hillsides would be recontoured by blasting or dozing the benches to soften the topography.

Once quarrying operations are terminated, equipment and structures would be removed; their foundations would be reduced below grade and covered in place. It is likely that an office or trailer would remain on site for ongoing revegetation monitoring, and for security purposes. The access road would be maintained for access to the main process area site and specific haul roads would be maintained to access reclamation activity and monitoring. Those portions of the rail line at natural surface elevation would remain in place. The length of rail proceeding below original ground line under the rock storage building will be removed and the spur cut backfilled. Ultimately all equipment, power poles, and buildings would be removed, road access would be restricted by gates, warning signs would be posted, and access to Quarry benches would be blocked by berms and/or boulders.

Revegetation

Revegetation of the mined areas occurs as described in the approved 2003 Mine Reclamation Plan. The Revegetation Plan element of the Reclamation Plan focuses on preparing the surface of the mined area and providing native seeds to take advantage of the infrequent rains.

Revegetation efforts are fully described in the Mine Reclamation Plan and would be varied over the life of the operation. The revegetation techniques are proposed as guidelines that would be followed until new information or techniques become available, which could improve the results of the revegetation activities. Revegetation efforts would use seeds and plants of native species collected locally (on-site and on adjacent areas). The undisturbed portions of the Quarry and areas adjacent to the Quarry provide the targets for achievement through the revegetation effort. The areas to be disturbed by future mining would also provide specimens for direct transplanting of native species, and the undisturbed areas would provide a source of seeds for the revegetation effort.

Changes to Mine Reclamation Plan

Since the USG Expansion/Modernization Project was approved in 2008, no changes to the Quarry Mine Plan[1] as proposed in the Mine Reclamation Plan[2] (March 2003) have occurred. However, minor

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[1] A Mine Plan is required for an application of land use on private land with a local lead agency under conditions of a CUP or Surface Mine Permit. A Surface Mine Permit is usually a CUP and subject to review under CEQA. The Mine Plan identifies the method and extent of mining to be approved in the permit. A mine plan document is designed to conform to the permit requirements stipulated in the lead agency's land use permitting procedure and requires review and approval by the local lead agency responsible for implementing the California Surface Mining and Reclamation Act (SMARA). A Mine Plan is essentially the same as a Plan of Operations but does not address all the federal regulations stipulated in 43 C.F.R. § 3809.

[2] A Mine Reclamation Plan is required under SMARA. California requires local lead agencies to require all mine plan approvals include a plan for reclamation. The requirements are stipulated in SMARA and are applied by the local lead agency as the representative of the Act (alternatively, the State can review and approve the plan on behalf of the lead agency). All mines approved since 1976 must include a Mine Reclamation Plan an element of which is a Revegetation Plan, and are subject to review under CEQA. The Reclamation Plan is circulated to the State for review with incorporation of the State Division of Mine Reclamation's recommendations. The Reclamation Plan is a separate permit document that can be revised and amended without changing the Mine Plan.

changes have occurred to the Plan of Operations[3] due to a reduction in the amount of public land at the Quarry. The Plan of Operations is subject to federal review by BLM and not County review, and, as such, is not described further in this Initial Study.

Under the current Quarry expansion, the limits of disturbance identified in the 2003 Mine Reclamation Plan have not changed; however, due to changes in land ownership and adjustments to the private land boundary resulting from updated and more precise mapping, the portion of the Mine Plan consisting of public lands has been reduced from 408 acres in 2003 to the present 73.2 acres. Of the 73.2 acres, 1.1 acres in the Annex Mill Site #1 have been disturbed by development of the access road; continued development of the Quarry is anticipated to disturbed approximately 9.8 additional acres of public lands. Approximately 1,118.7 acres of USG privately-owned land is currently disturbed or would be disturbed under the 2003 Mine Plan. For a total disturbance area of approximately 1,129.6 acres on both private and public land.

Well No. 3 and Associated Pipeline

Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (APN 033-020-009) and would provide processing water via a 10-inch-diameter, approximately 3.5-mile-long underground pipeline that would be developed within the existing USG narrow-gauge railroad right-of-way (ROW CACA 56908). The pipeline would extend from Well No. 3 to the existing offload facility within the Quarry processing area. In conjunction with the development of the pipeline, USG would install an electric supply line to serve the well pump, The power service line would be installed underground from the well head to the Quarry gate; power poles would be installed within the Quarry site. In this document, where reference is made to this pipeline, the electrical line is understood to be included even if not specifically mentioned. The locations of the proposed Well No. 3 and pipeline are shown on Figure 2.

Well No. 3

Approximately 26 AF/yr are needed to support Quarry operations. Originally, a water well for Quarry operations was permitted in 1983 under CUP 635-83 for a maximum withdrawal of 7,000 gallons per day (gpd) (Well No. 1). The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Consequently, the Quarry has historically received, and continues to receive, potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant.

Production from Well No. 1 declined steadily over time due to the limited presence of groundwater in the penetrated aquifer and severe scale buildup in the well casing due to high Total Dissolved Solids (TDS) levels. Therefore, a second well (Well No. 2) was drilled in 1993 to replace the original well pursuant to CUP 635-83, which was re-issued for the new well. However, water production from Well No. 2 also declined steadily over time. Quarry Well No. 2 has been rehabilitated without a significant improvement in water production. Currently, Quarry Well No. 2 produces between approximately 4,000 and 4,800 gallons per day (gpd), which is insufficient to meet USG's current need for approximately 15,000 gpd for Quarry operations.

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[3] A Plan of Operations is the BLM-required mine plan document required to comply with 43 C.F.R. §3809. It is essentially the Mine Plan formatted to comply with the federal regulations for consideration by BLM on the federal lands subject to their jurisdiction. A Plan of Operations may include the entire mine or portions of a proposed mine and is subject to review under the National Environmental Policy Act (NEPA).

In 2001, USG drilled a test hole approximately three miles east-northeast of the Quarry on company-owned land along the USG railroad right-of-way. Pumping tests indicate that a production rate of 25 gallons per minute (gpm) to 50 gpm may be sustainable at the test hole location. USG is proposing to install Quarry Water Well No. 3 within one-half mile of the successful test hole.

For comparison purposes, the current permit limit of 7,000 gallons per day is approximately equivalent to 7.8 AF/yr, or 4.9 gpm assuming that the pump is operated continuously. The needed 26 AF/yr is approximately equivalent to 16.1 gpm assuming that the pump is operated continuously. Thus, based on the pumping test results, a production well developed in the vicinity of the test well would be able to sustain an adequate production rate. The proposed project would result in an increase in the rate of groundwater extraction of approximately 18.2 AF/yr.

The proposed Quarry Well No. 3 site represents approximately 1/8-acre on USG property. Well. No. 3 would provide a reliable water supply capable of producing approximately 23,000 gallons per day (or 26 acre-feet per year [AF/yr]). The well would be approximately 6 inches in diameter and 565 feet in depth. Final well design and pipeline criteria are being engineered. The water would be used in the Quarry for dust suppression on the haul roads and crushing equipment, for the watering of transplanted desert plant species during reclamation, and as a possible supply of potable water for use by employees.

Pipeline

The proposed pipeline would be constructed of high-density polyethylene pipe (HDPE) and would be installed at a depth of about 4 feet below the ground surface. The pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. A trench, approximately five feet wide and seven feet deep would be excavated between the railroad and access road for installation of the pipeline. Excavated soils would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Construction would occur within a 30-foot-wide area along the entire length of the pipeline alignment. Therefore, development of the pipeline would disturb approximately 12.7 acres (30 foot wide by 3.5 miles) of land, most of which is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. All waterline/powerline construction areas would be restored to pre-project conditions following the completion of construction activities.

Viking Ranch Restoration

The Viking Ranch parcels were primarily former orchard land located in north of Borrego Springs and within the Coyote Creek Wash (see Figure 1). However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The mitigation site is located approximately 26 miles from the USG Quarry. Viking Ranch was used for orchard production until the site was purchased by the Borrego Water District in 2017. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The restoration program will remove these diversion features to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain. The restoration program is described in the *Draft Habitat Mitigation and Monitoring Plan for the United States*

Gypsum Company Plaster City Expansion/Modernization Project (HMMP) (Dudek 2022).

Baseline Conditions

The HMMP documents existing conditions on the restoration site. A site reconnaissance of the Viking Ranch site was conducted on June 1, 2018, by Hugh McManus of Dudek. No residence or other habitable structures were observed on the site. Evidence of past agricultural activity was observed in the form of irrigation lines and remnants of chipped trees in windrows. Additional notable observations include a decommissioned water well, a power distribution board, electrical power hook ups, debris, containers storing oil, and a weather station maintained and operated by University of California Irvine.

A jurisdictional delineation was completed for the restoration site that identified floodplain areas, ephemeral channels, and braided channels on the site, as shown on Figure 3. A total of 53.12 acres of jurisdictional waters were identified on the restoration site.

A Preliminary Environmental Site Assessment Report (ESA) (Dudek 2018, cited in Dudek 2022) was conducted on the site that included the collection of 10 soil samples that were analyzed for organochlorine pesticides. No organochlorine pesticides were detected at or above the above reporting limits in any of the 10 samples analyzed. The ESA includes the following recommendations to address potential hazards and hazardous materials concerns on the site:

- Two oil filled plastic containers observed on the site should be removed and properly disposed of in accordance with applicable local, state, and federal guidelines.
- Stained soil was observed on the site near a cement platform located in the southwest corner of the site. The stained soil should be removed and disposed of in accordance with applicable local, state, and federal guidelines.
- A water well was located on the site. If the owner of the site plans to use the well in the future, the well should be capped with a lockable lid. If no future use of the well is planned, the turbine discharge head and impeller shaft should be removed and the well should be abandoned in accordance with local, state, and federal guidelines. Alternatively, the well may be converted to a monitoring well.
- Surface water was observed flowing on the site from the adjacent property to the south. The source of the surface water should be identified. The surface water should then be prevented from entering the site or rerouted off of the site. Surface water from unknown sources has the potential to carry contamination onto the site.

A general biological survey and habitat assessment for sensitive species was conducted on the restoration site on October 17, 2019, by Callie Amoaku and Kathleen Dayton of Dudek. The species observed and their potential to occur on the site are described in the HMMP.

A record search for potential cultural resources was conducted by Dudek archeologists for the restoration site. No cultural resources have been recorded within the proposed restoration site and within a 1-mile buffer area. While no significant impacts or known tribal resources have been identified, the HMMP recommends monitoring for cultural resources during earth disturbance work during restoration implementation.

Site Preparation

The HMMP site preparation activities are summarized below. USG will select a County of San Diego approved Project Biologist who will review the final HMMP and restoration construction documents and help to ensure that all site protections, pre-work bird surveys, and any other required items are adequately performed prior to beginning restoration work.

Weed and Invasive Species Removal: Although a former orchard was demolished several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and the hydraulic disconnection with Coyote Creek remains. Orchard debris wood chips and larger stumps and branches remain a significant impediment to flow as well as diversion berms and ditches. The restoration of the site would clean the site of all large and/or coarse woody debris, surface irrigation pipe, irrigation standpipes, electrical infrastructure, etc. Existing native and non-native vegetation would be removed where necessary. Topsoil containing the seed bank of existing native vegetation would be retained on site.

The non-native tamarisk within the restoration site would be cut to grade and treated with a systemic herbicide approved for use in wetland areas. Cut tree segments would be carefully removed from the site avoiding damage to adjacent habitat. Any other non-native herbaceous species present in the enhancement areas would be removed using hand tools. Cut vegetation would be bagged/containerized and disposed of off-site in a legal manner.

Grading: Following non-native vegetation removal, the northern berm and diversion ditch would be backfilled and leveled with the adjacent upstream topography to remove the impediment to downgradient braided flow. The eastern berm would be graded to create numerous breaks in the berm to create multiple flow paths for flood waters to enter the restoration site. Portions of the eastern berm would be retained as dune features where possible, without impeding re-establishment of braided flow onto the restoration site from the floodplain to the east and northeast of the restoration site. Interior non-jurisdictional areas of the restoration site would be graded to provide the opportunity for flood water to flow in braided pattern across the entire restoration site. No soil import or export is anticipated for the restoration project. Berm removal areas are shown Figure 5 “Viking Ranch Conceptual Restoration Plan.”

The overall site would be graded to be compatible with the surrounding native land surface elevations, setting the top 2 inches of topsoil aside and used for final grade. Rough contour grading of ephemeral channels would take place to create micro-topographic variances as shown on Figure 5. The design is intended to re-establish braided flow patterns across the restoration site, consistent with adjacent Coyote Creek wash. It is anticipated that flood flows would naturally create macro- and micro-topographic fluvial features within the restoration site and a diversity of hydrologic and geomorphic conditions, leading to characteristic desert plant communities and animal habitat.

A grade structure is planned to be constructed in the southeast corner of the project where channel incision is beginning to run up into the proposed restoration site. If left unchecked, the head cut would continue to migrate upstream into the restoration site resulting in erosion of the land surface and destabilization of the floodplain. The structure would be constructed of wood timbers and slats to retain the soil on the restoration site. The effect of the structure would be to retain the upstream channel bed to stabilize the head cut that is presently causing unnatural flow and erosion on the site. The structure would be built to withstand water flow over the top, creating a stable bed gradient upstream (within the restoration site) and allowing water to continue flowing to the lower elevation floodplain present downstream.

Long term, the restoration site would once again become part of the wash and would receive hydrologic inputs from the surface flows of Coyote Creek.

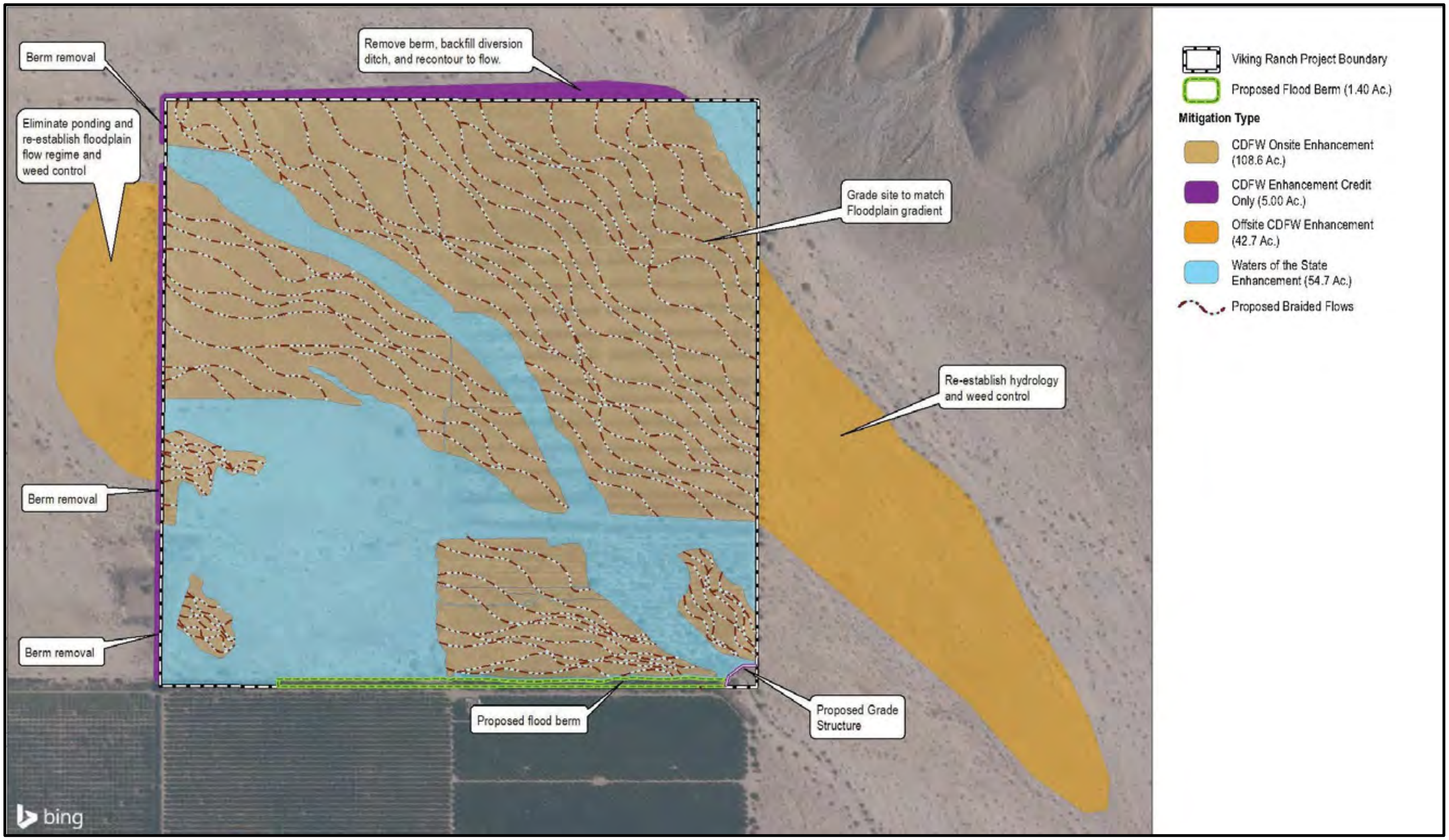
Erosion Control: Heavy sediment transport is a typical function of desert washes and flood plains. The intent of the restoration project is to return the former agricultural field into the functional floodplain of Coyote Creek wash. As such, it is expected that sediment would be deposited and exported from the restoration site during flood events. Erosion control best management practices (BMPs) would be used where necessary to maintain normal sediment transport functions while limiting destabilization of the restoration site. In general, the native vegetation established through seeding would provide effective erosion control, however additional BMPs such as burlap encased straw wattles/fiber rolls or burlap gravel bags may be needed, as determined by the Project Biologist and, or Qualified SWPPP Practitioner (QSP). Any recommendations made by the QSP or anyone else for the restoration site would be pre-approved by the Project Biologist. BMPs with nylon netting would not be used in restoration site. All straw wattles/fiber rolls would be certified free of noxious weeds. Erosion control seeding may not be applied to restoration site unless pre-approved by the Project Biologist. Non-native seeds would be avoided at all times.

Weed Control and Seed Selection and Application: Weed control would include hand-pulling of weeds, use of hand tools, weed whips, and/or foliar treatments of appropriate herbicides as determined by the Project Biologist. A native seed mix of appropriate desert plant species that are present within the Coyote Creek Wash would be imprinted onto the restoration site.

Avoidance and Minimization Measures: Impacts from fugitive dust that may occur during berm demolition, filling of the diversion ditch, and restoration site grading, would be avoided to the maximum extent practicable and minimized through water application for dust control during grading activities.

A biologist would be on site to oversee installation of temporary fencing, any grading within 100 feet of existing waters of the State to ensure permit compliance (404, other permits for the project), and educate contractors as needed on biological resources associated with the project.

Equipment would be checked for fluid leaks prior to operation and repaired as necessary. A spill kit for each piece of construction related equipment should be on site and must be used in the event of a spill.



SOURCE: Dudek, 2021; Aerial-Bing Mapping Services, 2018

NOTE: Image has been modified by Benchmark Resources and is not printed to scale.

Figure 5
Viking Ranch Conceptual Restoration Plan

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Fencing and Signage: Although trespassing is low in the surrounding areas and so not anticipated on the restoration site, the contractor would install free standing gates at the access point and/or bollards for extra protection. Fencing that entraps or otherwise adversely impacts wildlife would not be used. Temporary fencing would not be installed around enhancement areas or the stream channel establishment area.

Signage would be installed to at the gate(s) to identify the site as a habitat restoration project, and that trespassing and access from unauthorized personnel is prohibited.

Maintenance Plan

Following installation, site maintenance would occur quarterly (seasonally) throughout the 10-year maintenance and monitoring period, or more frequently if needed to meet the performance standards indicated herein. During the first year following completion of project installation, maintenance visits would be conducted monthly during spring months when germination and rapid plant growth are anticipated, then quarterly for the remainder of each monitoring year.

The maintenance activities on the restoration site would consist of weed control measures carried out through the following: (1) hand pulling, hand cutting, (2) cutting with handheld mechanical devices, and (3) application of approved herbicides. Herbicide treatments must be pre-approved by the Project Biologist and applied by a licensed or certified pest control applicator. The herbicide must be approved for use in wetland areas. Application of herbicide would be suspended should precipitation be expected to occur within 24 hours of application and/or if wind exceeds 6 mile per hour.

Plant pests would be controlled utilizing Integrated Pest Management Techniques (IPM). Pest control would be performed by the Restoration Contractor using the least toxic method available, such as washing pests off of plants with a strong stream of water, utilizing insecticidal soap, or installing plant protection devices.

Erosion control BMPs are not anticipated to be needed after vegetation has established in the restoration site. However, temporary BMPs such as burlap fiber rolls, silt fence, and burlap gravel bags would be maintained as needed for proper function until the site has reached Year 3, or until the Project Biologist has deemed the BMPs unnecessary. Once the site is stabilized by native vegetation the contractor would remove and dispose of temporary BMPs. If after year 3, there is active erosion or sedimentation within or directly adjacent to the project AND this may affect adjacent farmlands, the Project Biologist would assess the conditions and provide adaptive management recommendations including, but not limited to, weed free BMPs such as burlap encased straw wattles, fiber rolls or burlap gravel bags; and/or additional grading.

Monitoring and Reporting

The HMMP specifies ecological performance standards that must be met by the proposed restoration and the monitoring and reporting requirements necessary to document whether the ecological performance standards are being met. The ecological performance standards are based in part on the vegetation analysis conducted at a 4-acre reference site within the Coyote Creek wash located approximately 350 feet upstream of the Viking Ranch restoration site. The reference site has the same landscape position and is located within the same watershed as the restoration site. At the end of the 10-year maintenance and monitoring period, the annual report would summarize achievement of the ecological and restoration performance standards and document procedures for final sign-off/acceptance by the appropriate regulatory agency. The reference site may be used to determine if progress of restoration site is consistent with response of reference site to prevailing weather and environmental conditions in instances when performance standards are not achieved. If at the end of Year 10 not all of the performance standards have been met, then the final report would summarize recommendations for either continued maintenance and monitoring on the Viking Ranch restoration site, or implementation of contingency measures.

Long-Term Management Plan

Upon meeting the final performance standards and approval by the regulatory agencies the site will begin long-term management (in-perpetuity) by a qualified long-term natural lands manager. The initial land manager is USG. USG and subsequent designated land manager upon transfer of property to Anza-Borrego Desert State Park, shall implement the following long-term management plan. The Anza-Borrego Foundation will hold the conservation easement, and Anza-Borrego Desert State Park shall manage and monitor the restoration property in perpetuity to preserve its habitat and conservation values in accordance with the conservation easement and the long-term management plan. The land manager shall be responsible for providing an annual report to the signatory agencies detailing the time period covered, an itemized account of the management tasks, and total amount expended.

Old Kane Springs Road Preservation

The project proposes the preservation existing non-wetland waters desert wash, braided channels, fluvial process, and associated vegetation and wildlife within the 121-acre Old Kane Springs Road preservation site. The preservation site is a privately owned parcel located approximately 3 miles southwest of Ocotillo Wells and 10 miles northwest of the Quarry project. The parcel is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. The property is situated within an unnamed desert and all of the property is subject to flow during episodic rainfall events. Fluvial features are present in all areas of the property except for the maintained unpaved roadway. However, fluvial drainage patterns are not interrupted by the road, suggesting that during flood events, the road does not pose an impediment to flow. At least 61 acres of the preservation site are jurisdictional non-wetland waters of the State. The vegetation communities consist of Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. The property is zoned for low density residential development (one unit/40 acres) and therefore the property is under threat of development.

The preservation site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on all sides with restricted access. Locked gate will be installed across access roads into the site to restrict vehicular access to the preservation site. The preservation site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

Preservation Mechanism

Both the Viking Ranch restoration site and Old Kane Springs Road Preservation site will be preserved in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire restoration site and preservation site, which will promote long-term viability of the sites' waters of the State and surrounding habitat by conducting long-term management. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the preservation site. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the sites where these easements/uses do not currently exist.

SETTLEMENT AGREEMENT

Water at the Plant is delivered by pipeline from three wells owned by USG within an area located approximately 8 miles west of Plaster City near or adjacent to the community of Ocotillo. The USG wells pump from the same basin as other users. The County certified an EIR for the USG Expansion/Modernization Project that included Mitigation Measures 3.3-1 and 3.3-1 to address the potential impacts of additional pumping due to proposed Plant operations on other groundwater wells in the Coyote Wells Groundwater Basin. The Sierra Club filed a Motion of Supplemental Writ in 2008 that challenged the adequacy of the EIR and sought an order restricting USG's ability to pump groundwater in the basin.

On December 16, 2013, the Court of Appeal reversed a prior Superior Court order, holding that there was insufficient evidence to support the County's conclusion that the Mitigation Measures for the project, as adopted in January 2008, would be viable or effective in reducing the project's potential impacts on individual groundwater wells to a level of insignificance. As a result, in October 2018, the Sierra Club, Imperial County and the Imperial County Planning Commission, and USG (referred to collectively as the "Parties") entered into settlement negotiations. The settlement agreement dated November 13, 2018 and revised and augmented by the Notice of Entry of Order Regarding Discharge of the Write and Satisfied Order on Remittitur dated August 5, 2019 (Settlement Agreement), replaces Mitigation Measures 3.3-1 and 3.3-2 adopted in the 2008 EIR/EIS with new mitigation measures (Mitigation Measures 3.3-1-A through 3.3-1-G). The measures are intended to ensure that project impacts on individual groundwater wells within the Coyote Wells Groundwater Basin are less than significant. The project area and restoration site are not located within the Coyote Wells Groundwater Basin, and therefore this Settlement Agreement does not pertain to the project being analyzed in this Initial Study.

ANALYSIS APPROACH

The Quarry expansion and development of Well No. 3 and the associated pipeline underwent environmental review under CEQA, as documented in 2008 EIR/EIS. Under the Supreme Court standard set out in *College of San Mateo Gardens v. San Mateo County Community College District*, the County determined that the 2008 EIR/EIS is relevant and retains informational value. Accordingly, the County has determined that a supplemental EIR (SEIR), as described in CEQA Guidelines Sections 15162 and 15163, should be used for this evaluation. The 2008 EIR/EIS is available for review on the County's website (https://www.icpds.com/planning/environmental-impact-reports) or by request from the County.

Accordingly, the SEIR for the proposed project will evaluate the potential impacts associated with the Quarry expansion and development of Well No. 3 and associated pipeline that were not previously considered in the 2008 EIR/EIS. Additionally, the SEIR will evaluate the potential impacts associated with the restoration and preservation actions proposed at the Viking Ranch and Old Kane Springs Road sites. Applying the most recent criteria set forth in CEQA Guidelines, Sections 15162 and 15163, the SEIR will evaluate the environmental impacts associated with changed circumstances, new information that was not known and could not have been known at the time of the earlier CEQA evaluation, and revisions to the project. It is anticipated that new information related to the project will include studies that have been prepared as part of the 2019 SEIS and the HMMP. The proposed actions related to Quarry expansion and development of Well No. 3 and the associated pipeline have not changed since the issuance of CUP-08-0003 and approval of the 2008 EIR/EIS in 2008. Therefore, there are no substantial revisions to the proposed project. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site will be evaluated in the Initial Study and SEIR as new and separate project components.

11. Surrounding Land Uses and Setting: The project area and restoration and preservation sites are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea-level. The western portion of Imperial County/eastern portion of San Diego County is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley.

    The Plaster City Quarry and project alignment are located in the western portion of Imperial County, in an undeveloped area at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and along the southeast segment of the Fish Creek Wash. A portion of the northwest segment of the proposed pipeline alignment would cross Anza-Borrego Desert State Park.

    The existing rail line and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the Quarry and Well No. 3. The nearest residences to the project area are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3.

    The Viking Ranch restoration site is located in the eastern portion of San Diego County just south of Coyote Mountain, which is part of the Santa Rosa Mountains range and located within the Anza-Borrego Desert State Park. The restoration site is bordered by Anza-Borrego Desert State Park land to the west, north, and east, and by private property containing orchards to the south. The nearest residence is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

    The Old Kane Springs Road preservation site is located in the eastern portion of San Diego County 3 miles south of Ocotillo Wells and 7 miles northwest of the Plaster City Quarry. Other private parcels are present within the area but the predominate ownership in the area is Anza-Borrego Desert State Park.

12. Other public agencies whose approval is required *(e.g., permits, financing approval, or participation agreement.)*: Other public agencies whose approval may be necessary to implement the project, and who may need to rely on the project's CEQA documentation pursuant to their subsequent decision making, include the:

    - County of San Diego (Major Grading Permit)
    - California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
    - Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)

The following public agency approvals have already been obtained:

- U.S. Bureau of Land Management (Right-of-Way Grants [Case file numbers CACA-056908 and CACA-044014], 2003 Plan of Operations Revised April 2018)
- U.S. Fish and Wildlife Service (Biological Opinion FWS-ERIV-11B0345-19F1352)

13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentially, etc.?

[***Note:*** *Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code, Section 21080.3.2). Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code, Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code, Section 21082.3 (c) contains provisions specific to confidentiality.*]

Pursuant to federal and state regulations, consultation has been initiated with affiliated tribes. The County of Imperial sent letters on May 16, 2022, to notify tribes in both Imperial County and San Diego County of the proposed project and provide an opportunity for the tribes to consult with the County regarding the potential of the project to impact Tribal Cultural Resources.

A. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture & Forestry Resources	☒	Air Quality
☒	Biological Resources	☒	Cultural Resources	☐	Energy
☒	Geology/Soils	☒	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☒	Hydrology/Water Quality	☒	Land Use/Planning	☐	Mineral Resources
☐	Noise	☐	Population/Housing	☐	Public Services
☐	Recreation	☐	Transportation	☒	Tribal Cultural Resources
☐	Utilities/Service Systems	☐	Wildfire	☒	Mandatory Findings of Significance

B. ENVIRONMENTAL EVALUATION COMMITTEE DETERMINATION

After Review of the Initial Study, the Environmental Evaluation Committee has:

☐ Found that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ Found that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ Found that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☒ Found that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ Found that although the proposed project could have a significant effect on the environment, all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE DE MINIMIS IMPACT FINDING: ☐ Yes ☐ No

ENVIRONMENTAL EVALUATION COMMITTEE VOTES	YES	NO	ABSENT
PUBLIC WORKS	☐	☐	☐
ENVIRONMENTAL HEALTH	☐	☐	☐
OFFICE EMERGENCY SERVICES	☐	☐	☐
APCD	☐	☐	☐
AG	☐	☐	☐
SHERIFF DEPARTMENT	☐	☐	☐
ICPDS	☐	☐	☐

Jim Minnick, Director of Planning/Environmental Evaluation Committee Chairman

Date

III. PROJECT SUMMARY, LOCATION AND ENVIRONMENTAL SETTING

A. **Project Location**: The United States Gypsum (USG) Plaster City Quarry (Quarry) holdings consist of 2,048 acres and is located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor's Parcel Number [APN] 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-030-05-00, -07-00, -09-00, -10-00, and -11-00). The 121-acre Old Kane Springs Road preservation site is located 7 miles northwest of the USG Quarry in San Diego County (APN 253-150-34-00).

B. **Project Summary**: The proposed project consists of approval of a Conditional Use Permit from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. The locations of the Quarry, Well No. 3, and the associated pipeline are shown on Figures 1, 2, and 3. Together, these three project components are referred to as the "project area".

Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this Initial Study will evaluate potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

This Initial Study will also evaluate potential environmental impacts associated with the Viking Ranch site restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Dudek 2022). USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of water of the United States at the Quarry. The locations of these sites are shown on Figures 1, 3, and 4. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this Initial Study will evaluate the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

C. **Environmental Setting**: The project area, Viking Ranch restoration site, and Old Kane Springs Road preservation site are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea-level. This area is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley. The Quarry and project alignment are located in an undeveloped area at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and along the southeast segment of the Fish Creek Wash. A portion of the northwest segment of the proposed pipeline alignment would cross Anza-Borrego Desert State Park.

The Quarry facilities, narrow-gauge railroad, and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the proposed project. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3.

The Viking Ranch parcels was primarily former agricultural land located within the Coyote Creek Wash (see Figure 1). However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The Viking Ranch restoration site is bordered to the west, north, and east by the Anza-Borrego Desert State Park and to the south by privately-owned orchards. It is located at the base of Coyote Mountain, which is part of the Santa Rosa Mountains range. The nearest sensitive receptor is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

The Old Kane Springs Road preservation site is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. It contains Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. It is surrounded by undeveloped desert lands, some of which are privately owned, but the predominate ownership in the area is Anza-Borrego Desert State Park.

D. **Analysis**: Refer to analysis in Section IV, “Evaluation of Environmental Impacts,” below.

E. **General Plan Consistency**: The Quarry (including the expansion area), Well No. 3, and approximately 2.5 miles of the pipeline alignment are located in an area designated as Recreation/Open Space; the remaining 1 mile of the pipeline alignment is located in areas designated Government/Special Public; this segment is part of the Anza-Borrego Desert State Park.

The Quarry parcels (including the expansion area) are zoned either S-2 (Open Space/Preservation) or BLM. The Well No. 3 parcel is zoned S-2 (Open Space/Preservation). The pipeline alignment parcels are generally zoned S-2 (Open Space/Preservation) with one parcel zoned STATE (APN 033-010-016).

The Quarry and Well No. 3 and the associated pipeline are associated with surface mining operations and are consistent with the Recreation/Open Space designation of the Imperial County General Plan (Imperial County 2015a). Title 9, Land Use Ordinance, requires approval a CUP to allow surface mining operations on lands zone S-2. BLM and STATE lands are not subject to County zoning requirements.

The Viking Ranch restoration area is designated Semi-Rural Residential (SR-4) in the San Diego County General Plan and is zoned General Rural (S92) in San Diego County. The Old Kane Springs Road preservation site is designated Rural Lands (RL-40) in the San Diego County General Plan and is also zoned General Rural (S92). Because they are located in San Diego County, they are not subject to Imperial County zoning requirements. The restoration of the Viking Ranch site to more natural conditions and preservation of the Old Kane Springs Road site would not conflict with these designations.

IV. EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
    a) the significance criteria or threshold, if any, used to evaluate each question; and
    b) the mitigation measure identified, if any, to reduce the impact to less than significance

A. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surrounding? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS determined that all potential aesthetics impacts related to the expansion of the Quarry under the USG Expansion/Modernization Project, which includes the proposed Well No. 3 and associated pipeline, would be less than significant. No mitigation was required.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to aesthetics in the project area. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to aesthetics.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant aesthetic impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts related to aesthetic resources is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant**: The Quarry and Well No. 3 and the associated pipeline alignment are surrounded by open desert in all directions. Public-use recreational areas in the vicinity consist of the Anza-Borrego Desert State Park approximately one mile north of the Quarry and the Fish Creek Mountains Wilderness east of the Quarry and south of the proposed Well No. 3 and associated pipeline. The Fish Creek Wash, within which the proposed Well No. 3 and associated pipeline would be developed, is used by the public for recreational uses such as off-highway vehicle recreation and shooting. The nearest residences are located more than two miles north and east of the project area. The Quarry and Fish Creek Wash are accessible from Split Mountain Road which leads north to State Route 78.

Because the Quarry is surrounded by mountains on three sides, public views are limited to views from Split Mountain Road and the Fish Creek Wash on the north side of the Quarry. The Quarry itself is not accessible to the general public. The Quarry expansion would be noticeable only to those passers-by who are using the wilderness areas immediately north of the Quarry. The 2008 EIR/EIS conducted a visual analysis that evaluated visual simulations from publicly accessible areas and concluded that the proposed expansion and modernization of the Quarry would not significantly affect visual resources in the area. There are no proposed substantial changes to the project, substantial changes with respect to project circumstances, or new information that alter these conclusions. Therefore, the potential of the long-term operation and restoration of the Quarry to result in a substantial adverse effect on a scenic vista, the visual character of the area, or quality of public views of the Quarry site and its surrounding would be less than significant.

The proposed pipeline would be constructed within the already disturbed right-of-way adjacent to the narrow-gauge railroad and associated access road, and would be located underground, and therefore would not have the potential to substantially impact scenic vistas to users of surrounding wilderness areas or public views of the area from Split Mountain Road. Well No. 3 would be located more than 2 miles from the eastern boundary of Anza Borrego Desert State Park and Split Mountain Road and would consist of primarily underground infrastructure with a well head. The limited aboveground infrastructure would not be visible from the state park or from Split Mountain Road, and would have limited visibility to passing recreational users of the Fish Creek Wash. Therefore, the potential of the proposed Well No. 3 and associated pipeline to result in a substantial adverse effect on a scenic vista, the visual character of the area, or quality of public views of the project site and its surroundings would be less than significant.

The Viking Ranch restoration site is bordered to the west, north, and east by the Anza-Borrego Desert State Park and is located at the base of Coyote Mountain, which is part of the Santa Rosa Mountains range. The Anza-Borrego Desert State Park is identified in the San Diego County General Plan as an open space area that provides visual relief from the human-made environment and contributes to the aesthetic resource value of the County. The entrance to the Coyote Canyon Wildflower Viewing area of Anza-Borrego Desert State Park is located approximately 0.5 miles west of the restoration site. As described in the “Baseline Conditions” subsection of the Project Description, there are no unique scenic resources (e.g., rock out crops, historic buildings) on the restoration site. The proposed restoration program would temporarily bring grading equipment to the site and result in the disturbance of the ground surface, including the removal of existing vegetation. However, these activities would be temporary and upon completion of the restoration program, the area would be revegetated with native plant species and its visual appearance would be consistent with the surrounding Coyote Creek wash. Consequently, the potential of the proposed restoration of the Viking Ranch site to result in a substantial adverse effect on a scenic vista, the visual character of the area, or quality of public views of the site and its surroundings would be less than significant.

The preservation of the Old Kane Springs Road site would involve posting signage indicating the area is a natural open space preserve and that trespassing is not allowed and installing locked gates across access roads into the site to restrict vehicular access to the preservation site. The preservation of the site would ensure that the site is not developed and would maintain the existing condition of the site. Therefore, the potential of the proposed preservation of the Old Kane Springs Road site to result in a substantial adverse effect on a scenic vista, the visual character of the area, or quality of public views of the site and its surroundings would be less than significant.

b) **No Impact.** The nearest designated state scenic highway to both the project area and the restoration and preservation sites is State Route 78 west of the San Diego County/Imperial County project boundary and approximately 6.25 miles northwest of the project area, approximately 2 miles north of the Old Kane Springs Road preservation site, and approximately 13 miles south of the Viking Ranch restoration site (Caltrans 2018). State Route 78 east of the San Diego County/Imperial County project boundary is an eligible state scenic highway and is located approximately 6 miles north of the project area, approximately 2 miles north of the Old Kane Springs Road preservation site, and approximately 17 miles southeast of the restoration site (Caltrans 2018). At these distances, the project area and restoration and preservation sites would not be visible from any portion of State Route 78. There would be no impact.

c) **Less than Significant.** For the reasons described in discussion “a,” based on the continued implementation of the existing mitigation and compliance, in non-urbanized areas, the proposed Quarry expansion will not substantially degrade the existing visual character or quality of public views of the site and its surrounding.

d) **Less than Significant.** As described in the 2008 EIR/EIS, the proposed Quarry expansion would utilize the existing structures and facilities and the Quarry and would upgrade some facilities. No changes to Quarry operating methods are proposed that would generate new sources of lighting or glare. The upgrades to Quarry facilities would marginally increase, but not introduce new sources of light or glare at the Quarry. Therefore, the potential of the Quarry expansion to create substantial new sources of light and glare would be less than significant.

The proposed project does not propose any new sources of lighting at Well No. 3 or along the associated pipeline.

The restoration of the Viking Ranch site and preservation the Old Kane Springs Road site would not develop any structures or lighting on the site with the potential to generate light or glare. There would be no impact.

B. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. --

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The previous environmental review process did not identify Agriculture and Forest Resources as a resource topic with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, Well No. 3, and pipeline are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to agriculture and forest resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to agriculture and forest resources.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to agriculture and forest resources or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts to agriculture and forest resources is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **No Impact.** The project site is not located on or near an area designated as containing Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) (California Department of Conservation [CDOC] 2016); within any areas zoned for agricultural use; or within land under Williamson Act Contract. It is also not located on or near forest land. It does not propose any activities or land uses that could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. There would be no impact related to agriculture or forest resources.

Neither the Viking Ranch restoration site or Old Kane Springs Road preservation site are located on or near an area designated as containing Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) (CDOC 2016); nor within land under Williamson Act Contract. They are not in current use for agricultural production. The restoration site and preservation site are zoned General Rural (S92), which is zoning that allows for the development of large lot residences, essential service, and agricultural uses. Although the proposed project would prevent the future use of the sites for agricultural purposes, maintaining the sites as open space would not conflict with the zoning regulations. The sites are not located on or near forest land. The sites would be left as open space and therefore would not include any features that could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. There would be no impact related to agriculture or forest resources.

b) **No Impact.** For the reasons described in “a,” the proposed Quarry expansion will not conflict with existing zoning for agricultural use, or a Williamson Act Contract.

c) **No Impact.** For the reasons described in “a,” the proposed Quarry expansion will not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production.

d) **No Impact.** For the reasons described in “a,” the proposed Quarry expansion will not result in the loss of forest land or conversion of forest land to non-forest use.

e) **No Impact.** For the reasons described in “a,” the proposed Quarry expansion will not involve other changes to the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use.

C. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to the following determinations.

Would the Project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☒	☐	☐	☐
c) Expose sensitive receptors to substantial pollutants concentrations?	☒	☐	☐	☐
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The Quarry is located in the central western portion of Imperial County adjacent to the Imperial County/San Diego County line. Imperial County is in the southeastern corner of California with the relatively flat Imperial Valley and the southern Salton Sea in the center surrounded by multiple mountain ranges to the east and west. The State and Federal air quality regulations have designated this region as the Salton Sea Air Basin, whose Imperial County portion is under the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD). The Salton Sea Air Basin encompasses the entirety of Imperial County and the southeast portion of Riverside County and is generally an arid desert region, with a significant land area located below sea level. The hot and dry conditions experienced in the region are a result of a large, semi-permanent high-pressure area that dominates the Imperial Valley and the presence of the coastal mountains to the west. The high pressure blocks most storms, except during the winter when the pressure is the weakest and tends to shift to the south. The coastal mountains tend to block moist air from entering the valley resulting in hot temperatures during the summer and dry weather year-round.

The Salton Sea Air Basin contains relatively few major emissions sources, but may experience emissions transported from Mexicali, Mexico and from significant vehicular traffic, particularly near the two international ports of entry: Calexico West and Calexico East. Emissions sources within the Salton Sea Air Basin consist of geothermal power generation, food processing, plaster and wallboard (gypsum) manufacturing, and other light industrial facilities. Additionally, the continuing fall in the water surface elevation of the Salton Sea is expected over time to generate fugitive dust originating from newly exposed sediments originally deposited underwater from agricultural runoff in the Salton Sea.

Under the Quarry expansion, excavation operations onsite would extend for approximately 80 years and Quarry production would increase from approximately 1.13 million tons per year to 1.92 million tons per year. Criteria air pollutant emissions associated with the Quarry operations include stationary sources, fugitive dust sources, and mobile sources. The 2008 EIR/EIS estimated emissions of criteria air pollutants for the pre-project and post-project conditions and found that emissions resulting from the expansion and modernization of the Quarry would not exceed the CEQA thresholds of significance presented in the *CEQA Air Quality Handbook* (ICAPCD 2017a) and the impact would be less than significant. Although the criteria air pollutants generated by expansion of the Quarry would not exceed the CEQA thresholds of significance, the 2008 EIR/EIS noted that exhaust emissions from mobile equipment would increase due to increased production of gypsum at the Quarry. The 2008 EIR/EIS includes the following mitigation measure to further limit exhaust emissions from mobile equipment at the Quarry:

> **Mitigation Measure 3.6-1a:** USG shall ensure all equipment is maintained and tuned according to manufacturers specifications.
>
> **Mitigation Measure 3.6-1b:** USG shall schedule production activities to minimize daily equipment operations and idling trucks.
>
> **Mitigation Measure 3.6-1c:** USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.

USG transports gypsum from the Quarry to the Plant via a private narrow-gauge railroad line which has been in operation since the 1920s. The analysis of Quarry expansion also evaluated the potential of the emissions generated by the increased number of train trips to and from the Quarry to exceed significance thresholds. It was found that the net exhaust emissions changes for criteria pollutants from the diesel locomotive between the pre-project and the post-project conditions would not exceed the CEQA thresholds of significance.

The 2008 EIR/EIS noted that construction of Well No. 3 and the associated pipeline would be relatively short term (10 weeks) and would disturb a relatively small area (1/8 acre would be disturbed during well, and about 1,500 feet of trench, about one acre, would be active at any given time during pipeline construction). The 2008 EIR/EIS found that the combined emissions from the construction of both the Quarry and Plant pipelines would not exceed the CEQA thresholds of significance. Emissions from the operation of Well No. 3 and associated pipeline were determined to be negligible. Therefore, the impact related to air quality emissions from the construction and operation of Well No. 3 and the associated pipeline was found to be less than significant.

The previous environmental review process did not identify odor as an issue with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to air quality. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Since the 2006 Draft EIR/EIS and the 2008 Final EIR/EIS were prepared, there have been changes to attainment designations, applicable regulations, plans or policies/management goals that affect air quality. The updated information as listed below are considered herein.

Attainment/Nonattainment Designations: The Imperial County portion of the Salton Sea Air Basin is currently designated as a nonattainment area (moderate) for the 8-hour Ozone (O3) NAAQS and CAAQS and nonattainment (serious) for PM_{10} NAAQS and CAAQS; this has not changed since the 2008 Final EIR/EIS (refer to blue shaded area in Figure 4). There were no defined attainment/nonattainment areas for $PM_{2.5}$ in 2008. In 2009, the U.S. Environmental Protection Agency (USEPA) designated a partial County area, the south central or valley area of Imperial County, as nonattainment (moderate) for $PM_{2.5}$ NAAQS (refer to Figure 4). The County is in attainment for $PM_{2.5}$ CAAQS. The project areas are located to the west of the partial County area and therefore are not within the area designated as nonattainment for $PM_{2.5}$ NAAQS. The Imperial County portion of the Salton Sea Air Basin is in attainment or unclassified with the NAAQS and CAAQS for the other applicable criteria pollutants.

Imperial County 2009 PM_{10} SIP and 2018 Redesignation Request and Maintenance Plan for PM_{10}: The ICAPCD adopted the 2009 PM_{10} State Implementation Plan (SIP) in August 2009 that developed fugitive dust control measures (Regulation VIII). The USEPA approved these Regulation VIII fugitive dust rules into the Imperial County portion of the California SIP in April 2013. The Regulation VIII fugitive dust rules (as updated) were based on the related 2005 Best Available Control Measure (BACM) analysis. Rules 800 – 805 of the Regulation VIII fugitive dust rules were included in the 2008 Final EIR/EIS. USG's operations are required to comply with these regulations as applicable and updated enforceable through the ICAPCD.

The ICAPCD and CARB approved the "Imperial County 2018 Redesignation Request and Maintenance Plan for PM_{10}" in late 2018. This document revises the 2009 PM_{10} SIP and requests redesignation of the Imperial Valley Planning Area as attainment. The Imperial Valley Planning Area is currently designated as a Serious nonattainment area for the PM_{10} NAAQS but can be redesignated as attainment if, among other requirements, the USEPA determines that the NAAQS has been attained. A review of the PM_{10} monitoring data from 2014 through 2016 shows that, when excluding exceptional events (i.e., high wind driven dust storms), the Imperial Valley Planning Area did not violate the federal 24-hour PM_{10} standard.

Imperial County 2017 75 ppb 8-Hour Ozone SIP: The ICAPCD adopted the 2017 Ozone SIP in September 2017. This SIP is under review by the USEPA. The SIP shows through photochemical grid modeling and a weight of evidence analysis that, but for emissions emanating from Mexico, the control measures included in the SIP are adequate to attain the 2008 Ozone standard and maintain this status through the July 20, 2018, attainment date and into the future.

The ICAPCD is working cooperatively with counterparts from Baja California Department of Environmental Protection to implement emissions reductions strategies and projects for air quality improvements at the border. The two states strive to achieve these goals through local input from government officials and representatives from academia, environmental organizations, and the general public. The Imperial Valley-Mexicali Air Quality Task Force (AQTF) has been organized to address unique issues in the binational Mexicali/Imperial Valley air shed. This group promotes regional efforts to improve the air quality monitoring network, to inventory emissions, and to develop air pollution transport modelling, as well to create programs and strategies to improve air quality.

Permits: The Plant and Quarry operate within the jurisdiction of the ICAPCD under a Title V Operating Permit issued in accordance with the provisions of 40 CFR Part 70 and Rule 900 of the ICAPCD. Three active permits (Nos. 1992, 2456, and 2834) issued by the ICAPCD to operate stationary sources at the Quarry are incorporated into the Plant's and Quarry's Title V Operating Permit (V-2834). The V-2834 permit renewal application was submitted on April 18, 2016, and is currently under review by the ICAPCD for renewal purposes. Per ICAPCD Rule 115, permits issued by the ICAPCD shall require compliance with all applicable air pollution control regulations of federal, state, and local agencies. USG is required to comply with its Title V Operating Permit and all other applicable ICAPCD rules as amended.

New Information: Since 2008, air quality regulations promulgated by the County SIPs have substantially reduced the diesel emissions from the equipment in use at the Plant and Quarry compared with the equipment assessed in the 2006 Draft EIR/EIS. These regulations require the following:

- Limits vehicle idling to no more than 5 consecutive minutes at one location, requires a written idling policy, and requires a disclosure when selling vehicles (California Code of Regulations Title 13, Section 2485; 2004 as amended);
- Requires all vehicles to be reported to ARB (using the Diesel Off-Road Online Reporting System, DOORS) and labeled;
- Restricts the adding of older vehicles into fleets starting on January 1, 2014; and
- Requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing Verified Diesel Emission Control Strategies (VDECS; i.e., exhaust retrofits).

Consequently, the 2019 SEIS updated the emissions estimates of all proposed components of the USG Expansion/Modernization Project, including the new water pipeline and electrical line for the Quarry water supply. Based on the updated criteria air pollutant emissions estimates for the operation of the Quarry under the proposed expansion, the 2019 SEIS found that the proposed project would not generate total annual emissions that exceed the CEQA thresholds of significance.

The 2019 SEIS also estimated the criteria air pollutant emissions from mobile and fugitive sources and found that the mobile and fugitive emissions from the USG Expansion/Modernization Project, including emissions from both Quarry and Plant sources (e.g., Quarry mobile sources, locomotive operation, and construction of the proposed Well No. 3 and associated pipeline), would not generate total annual emissions that exceed the CEQA thresholds of significance.

Analysis Required:

a) **Potentially Significant**. Similar to the 2008 EIR/EIS, the 2019 SEIS found that the potential criteria air pollutant emissions from the Quarry expansion operations and from development and operation of Well No. 3 would be less than significant. The preservation of the Old Kane Springs Road site would involve activities and equipment (e.g., sign posting, trash removal) that would generate negligible emissions of air pollutants and odor. However, the County has determined that, due to the proposed restoration of Viking Ranch, the air quality emissions resulting from the use of heavy equipment during site preparation is a substantial change in the proposed project that could result in a substantial increase in the severity of impacts related to air quality. Therefore, impacts related to air quality should be analyzed in the SEIR.

b) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

c) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially expose sensitive receptors to substantial pollutants concentrations.

d) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially result in other emissions (such as those leading to odors adversely affecting a substantial number of people.

D. BIOLOGICAL RESOURCES

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐
e) Conflict with any local policies or ordinance protecting biological resource, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

Special-Status Plant Species

The 2008 EIR/EIS determined that impacts to vegetation within the Quarry and at Well No. 3 and the associated pipeline alignment would be less than significant because no special-status plant species were observed in the project area; large tracts of similar vegetation and habitat are protected in the adjacent Anza Borrego Desert State Park to the west and BLM-managed wilderness land to the east; and because revegetation of the project area with native plants would be required under the reclamation plan for the Quarry. These factors are summarized in greater detail below.

The proposed project is located in the Colorado Desert. Vegetation in the arid Colorado Desert is sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Franseria ilicifolia*), burrobush (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), smoketree (*Psorothamnus spinosus*) as well as several varieties of cactus such as barrel cactus (Ferocactus acanthodes), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*). Three special-status plant communities are reported in the area by the California Natural Diversity Data Base (CNDDB): desert fan palm oasis, mesquite bosque, and transmontane alkali marsh.

Two biological field surveys have been conducted for the Quarry site; the first by Lilburn Corporation in 1995, and the second by White and Leatherman BioServices in 2002. No special-status plants were observed at the Quarry, at Well No. 3 site, or along the pipeline alignment. Consequently, biologists concluded that, based on habitat and geographic and elevational ranges, no listed threatened or endangered plant species would be affected at the Quarry, at Well No. 3, or along the pipeline alignment. In addition, large tracts of similar vegetation and habitat are protected in the adjacent Anza Borrego Desert State Park to the west and BLM-managed wilderness land to the east. Finally, under SMARA, a revegetation plan must be prepared and implemented as part of a reclamation plan for an operating quarry. Revegetation would follow a series of steps that can be varied over the life of the operation but are designed to produce tangible results. Revegetation efforts would use seeds and plants collected locally and supplemented, as needed, by seeds collected and stored by a contractor specializing in native plants. USG would salvage topsoil and growth media (most desert soils have little topsoil development; where there is no topsoil, the material in which the majority of the plant roots are growing is referred to as “growth media”) and stockpile this material for use in the revegetation effort. The revegetation plan required under SMARA would act as mitigation for any potentially significant impacts by revegetating disturbed areas of the Quarry with native plants. SMARA requires financial assurances that reclamation of the site will occur. Therefore, revegetation efforts at the Quarry, over time, would result in a site that is natural open space. For these reasons, the 2008 EIR/EIS concluded that that potential of the Quarry expansion and development of Well No. 3 and the associated pipeline to result in the loss of special-status plant species or substantial loss of desert shrubland habitat would be less than significant.

Special-Status Wildlife Species

Terrestrial Wildlife Species

The Colorado Desert supports a diverse wildlife population. Based on literature reviews, biologists identified 27 special status animal species occurring or potentially occurring in the general region of the Quarry site. Of these, four are state- or federally-listed threatened or endangered species – desert pupfish (*Cyprinodon macularius*), desert tortoise (*gopherus agassizii*), barefoot banded gecko (*Coleonyx switaki*), and peninsular bighorn sheep (*Ovis canadensis*) – and one, flat-tailed horned lizard (*Phrynosoma mcallii*), is a special-status wildlife species protected by an interagency management agreement.

Regarding the Quarry expansion, the 2008 EIR/EIS found that Quarry activities could impact multiple special-status wildlife species including migratory birds, peninsular bighorn sheep, and the barefoot banded gecko. The 2008 EIR/EIS includes the following mitigation measures to reduce potential impacts from Quarry expansion to the special-status wildlife species:

> **Mitigation Measure 3.5-1a**: Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.
>
> **Mitigation Measure 3.5-1b**: Phasing of Quarry development and closure: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.
>
> **Mitigation Measure 3.5-1c**: Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.
>
> **Mitigation Measure 3.5-1d**: Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the U.S. Fish and Wildlife Service (USFWS) that will: (1) provide a statement about whether the proposed project is “likely or not likely to jeopardize” the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.
>
> **Mitigation Measure 3.5-1e:** Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to “take” barefoot banded gecko must be completed prior to land disturbance.

> **Mitigation Measure 3.5-1f**: Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.

Regarding the development of Well No. 3 and the association pipeline, the 2008 EIR/EIS found that, with the exception of the flat-tailed horned lizard, impacts to all other special-status wildlife species were found to be less than significant; the flat-tailed horned lizard was observed basking on the rails of the narrow-gauge line. The BLM and other cooperating agencies have implemented a *Flat-tailed Horned Lizard Rangewide Management Strategy (2003 Revision)* that would minimize adverse impacts and mitigate for residual impacts throughout the flat-tailed horned lizard's geographic range. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to the Flat-tailed Horned Lizard:

> **Mitigation Measure 3.5-2:** USG will comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.

Fish Species

The 2008 EIR/EIS also evaluated the potential of the expansion and modernization of the Quarry to interfere with surface flows and groundwater recharge and thereby adversely affect discharge in San Felipe Creek, which is located approximately 11 miles northeast of the Quarry, and the potential for operation of Well No. 3 to adversely affect the discharge of San Felipe Creek Spring and Fish Creek Spring, which are located approximately 11 miles northeast of Well No. 3, near the confluence of San Felipe Creek and Fish Creek Wash. San Felipe Creek, San Felipe Creek Spring, and the Fish Creek Spring support the habitat for a population of Desert pupfish (*Cyprinodon mascularius*), an endangered species.

The Quarry hydrologic evaluation estimated that the Quarry expansion area (845 acres) accounts for 0.05 percent of the total volume attributed to precipitation within the Pupfish's drainage area. The evaluation estimated the drawdown in the springs due to the operation of Well No. 3 would be several thousandths of a foot (approximately 1 millimeter) and therefore would have a less than significant impact on desert pupfish. Based on the limited contribution of runoff from the Quarry to San Felipe Creek, the 2008 EIR/EIS concludes that, even if activities in the new Quarry areas were to prevent all rainfall from either recharging the groundwater basin or contributing to surface flows, the impact on surface water and groundwater would be negligible compared with other watershed processes and are not likely to have meaningful adverse impacts on pupfish.

The Well No. 3 hydrologic evaluation noted that, prior to 1984, flow from San Felipe Creek Spring and Fish Creek Spring only occurred intermittently. Since 1984, however, flow from these two springs had occurred year-round. Water-quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring were due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. Both San Felipe Creek Spring and the Fish Creek Spring support the habitat for a population of Desert pupfish. The evaluation estimated the drawdown in the springs due to the operation of Well No. 3 would be several thousandths of a foot (approximately 1 millimeter) and therefore would have a less than significant impact on desert pupfish.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to biological resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Since the 2008 EIR/EIS was prepared, there have been changes to applicable regulations, plans or policies/management goals that affect biological resource management. In 2009, the USFWS published the final designation of critical habitat for peninsular bighorn sheep, replacing the original critical habitat designation published in 2001. The planned Quarry expansion area is located within designated critical habitat. The footprint of the existing Quarry (as of 2009) was excluded from critical habitat.

New Information: An updated *Jurisdictional Delineation* (Hernandez Environmental Services 2016), updated *Biological Resources Technical Report* (Aspen Environmental Group 2019), and *Update on Groundwater Conditions* memorandum (Todd Groundwater 2019) were completed for the USG Expansion/Modernization Project as part of the 2019 SEIS. The *Biological Resources Technical Report* reflects the additional data gathered by biological field surveys conducted in October 2014, April and October 2016, and March and April 2017, by biologists with appropriate experience related to the special-status wildlife and plant species of the area. The report indicates that Quarry expansion and development of Well No. 3 and the associated pipeline could result in impacts to peninsular bighorn sheep behavior, desert kit fox and American badger, flat-tailed horned lizard, and nesting birds, including borrowing owls. Avoidance and minimization measures were recommended to address potential impacts these species. These measures include the recommendation that USG acquire or set aside an area of designated critical habitat away from the Quarry's operations for long-term wildlife habitat conservation in order to minimize the loss of designated critical habitat within the Quarry. The report notes that the acquisition of compensation habitat will be subject to review and approval by the BLM and wildlife agencies (e.g., CDFW). This compensation habitat recommendation was included as Mitigation Measure 3.4-10 in the 2019 SEIS.

The *Jurisdictional Delineation* identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The *Jurisdictional Delineation* noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The *Jurisdictional Delineation* recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction.

An *Update on Groundwater Conditions* memorandum conducted an analysis that indicates that current Quarry operations are not the cause of the recent decline in flows at San Felipe Creek. The memorandum notes that no changes have occurred in the local groundwater basin that alter the findings in the 2008 EIR/EIS.

Analysis Required:

a) **Potentially Significant.** Under the proposed project, approximately 134.29 acres of ephemeral streambeds and washes located within the Quarry and along the proposed pipeline alignment would be excavated and filled. In addition, potential impacts could occur to special-status species, including flat-tailed horned lizard, peninsular bighorn sheep, desert kit fox and American badger, and nesting birds, including burrowing owls. The 2019 SEIS required additional mitigation to the mitigation proposed in the 2008 EIR/EIS. USG has identified potential mitigation properties that are intended to mitigate for potentially significant impacts to special-status species. The preservation of the Old Kane Springs Road Site would preserve existing biological resources. The restoration of the Viking Ranch site would temporarily disturb some existing biological resources but would restore the native vegetation on the site. The County has determined that, based on the new information available in the 2019 SEIS and input obtained during coordination with CDFW, impacts to biological resources and related mitigation measures (including USG proposed restoration and preservation actions) should be analyzed in the SEIR.

b) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

c) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

e) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially conflict with any local policies or ordinance protecting biological resource, such as a tree preservation policy or ordinance.

f) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

E. CULTURAL RESOURCES

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

Archaeological investigations were conducted as part of the 2008 EIR/EIS. The following historic sites were identified and recorded using appropriate State Department of Recreation site record forms: the Quarry, site USG-01, USG's narrow-gauge railroad, and remnants of County Route S80. The 2008 EIR/EIS determined that impacts to known prehistoric and historic resources within USG Expansion/Modernization Project area would be less than significant. However, it was noted that excavation in previously undisturbed areas could uncover unknown resources. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to unknown cultural resources (this mitigation measure also applies to Topic XVIII, Tribal Cultural Resources):

> **Mitigation Measure 3.8-3:** If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. An archaeologist qualified by the Society of Professional Archaeologists (SOPA) shall be deemed "qualified" for purposes of this mitigation measure. The services of a qualified archaeologist may be secured by contacting the Center for Public Archaeology – California State University, Fullerton or a member of SOPA.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to cultural resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to cultural resources.

New Information: The BLM requires that areas not subject to cultural resources inventory survey for over 10 years must be re-examined. Therefore, areas that were investigated for the USG Expansion/Modernization Project in 2003 were again inventoried in 2018. An updated Cultural Resources Report was completed as part of the 2019 SEIS. The cultural resources study included an archival and records search of the USG Expansion/Modernization Project area of potential effects (Project APE) as well as a pedestrian inventory and spot-check survey of all accessible areas of the Project APE. A total of 1,981 acres were inventoried. Approximately 539 acres are on public lands, 17 acres are on State of California lands, and 1,425 acres are on private lands. The APE for the proposed pipeline between the Quarry and proposed Well No. 3 was 50 feet wide on either side of the proposed pipeline alignment, and the length of the proposed line (approximately 3.5 miles).

During the pedestrian inventory and spot-check survey, 24 cultural resources were newly discovered, and consisted of two prehistoric archaeological sites, 13 prehistoric isolated finds, and nine historic period isolated finds. Of these 24 resources, 18 of these resources, including one archaeological site and 17 isolated finds, were noted within the Quarry, and one prehistoric archaeological site and three isolated finds were noted in the vicinity of the proposed Well No. 3 and associated pipeline alignment.

Due to the identification of newly discovered cultural resources within the Project APE, which includes the Quarry, Well No. 3, and the associated pipeline alignment, the 2019 SEIS recommended the implementation of the following mitigation measures:

> **Mitigation Measure 3.6-1: Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects.** Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.
>
> **Mitigation Measure 3.6-2: Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way.** A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.

Analysis Required:

a) **Potentially Significant.** New information available in the 2019 SEIS that indicates the presence of three newly discovered cultural resources in the vicinity of the proposed Well No. 3 site and associated pipeline alignment. The preservation of the Old Kane Springs Road site would not involve any ground disturbing activities that could impact cultural resources; however, the restoration of the Viking Ranch site would involve grading and ground disturbance and therefore would have the potential to encounter buried cultural resources. For these reasons, the County has determined that impacts related to cultural resources should be analyzed in the SEIR.

b) **Potentially Significant.** For the reasons described in "a," the proposed Quarry expansion could potentially cause a substantial adverse change in the significance of an archaeological resource.

c) **Potentially Significant.** For the reasons described in "a," the proposed Quarry expansion could potentially disturb any human remains, including those interred outside of dedicated cemeteries.

F. ENERGY

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS discussed energy consumption and noted that implementation of the USG Expansion/Modernization Project would result in the consumption of nonrenewable energy resources, primarily in the form of petroleum products, such as diesel fuel and gasoline, and electricity. Fuel consumption by heavy equipment would be the largest single energy requirement. One of the primary opportunities for energy conservation was noted to be the regular, scheduled maintenance of the vehicles and equipment to maximize fuel efficiency. The 2008 EIR/EIS noted that vehicle and heavy equipment maintenance associated with the Quarry-related operations, which include maintenance of Well No. 3 and the associated pipeline, would be performed at the shop located at the Quarry.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to energy. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Energy must now be discussed under current CEQA Guidelines.

New Information: The 2019 Final SEIS presented existing and proposed fuel and electricity use. Table 1, “Existing and Projected Use of Non-Renewable Resources for USG Expansion Project” shows the rate at which these non-renewable resources were used in the one-year period between 2017 and 2018, according to USG’s records, and also shows the quantity of these resources that would be used for the life of the Quarry beyond 2018, assuming 140 million tons of gypsum would be mined.

Table 1
Existing and Projected Use of Non-Renewable Resources for USG Expansion Project

Non-Renewable Resource	2017-18 Annual Use forTotal Gypsum Mined/Processed (0.78 million tons)	Use per Ton of Gypsum Mined	Project Total Use Over Life of Gypsum Reserve (Beginning 2018-19) Total 140 million tons
Grease	4,000 gallons	0.005 gallons	700,000 gallons
Oil	6,247 gallons	0.008 gallons	1,120,000 gallons
Diesel Fuel	129,524 gallons	0.166 gallons	23,240,000 gallons
Gasoline	8,156 gallons	0.010 gallons	1,400,000 gallons
Electricity	38,808,306 KWh	49.754 KWh	6,965,560,000 KWh
Natural Gas	1,393,600 Btu	1.786 Btu	250,040,000 Btu
Propane	77,948 gallons	0.099 gallons	13,860,000 gallons

Sources: Table 3.11-1 of the 2019 Final SEIS.
Notes: KWh = kilowatt-hours; Btu = British thermal unit.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant energy impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to energy use is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant.** As shown in Table 6, the operations conducted under the USG Expansion/Modernization Project, including long-term Quarry operation and operation of Well No. 3 and the associated pipeline, would consume oil, gasoline, natural gas, diesel, and electricity for equipment and other needs. The restoration of the Viking Ranch would consume fuels (e.g., oil, gasoline, diesel), but would not consume electricity or natural gas. At the conclusion of mining operations, the Quarry and the pipeline rights-of-way would be reclaimed and revegetated allowing the potential for re-use of the land, and no further demand for non-renewable resources would occur with respect to the proposed project. Similarly, upon completion of site preparation activities and the maintenance and monitoring activities under the 10-year maintenance plan, minimal energy resources would be required for the long-term maintenance of the Viking Ranch restoration site.

Under the proposed Quarry expansion, ongoing mining, processing, haul truck loading, and related activities would continue to use fuel and electricity. However, the electricity, fuel, or other energy consumption associated with the proposed long-term Quarry operation is reasonable and anticipated to be proportional on a per ton basis. In addition, although the proposed project would result in increases in consumption of electricity, natural gas, diesel, and propane, the project is expected to achieve energy efficiencies typical for mining and reclamation projects in California. Construction equipment fleet turnover and increasingly stringent state and federal regulations on engine efficiency, combined with local, state, and federal regulations limiting engine idling times and require recycling of construction debris, would further reduce the amount of transportation fuel demand during the Quarry mining operations. State and federal regulatory requirements addressing fuel efficiency are expected to increase fuel efficiency over time as older, less fuel-efficient vehicles are retired. The efficiency standards and light/heavy vehicle efficiency/hybridization programs contribute to increased fuel efficiency and therefore would reduce vehicle fuel energy consumption rates over time. While the proposed Quarry expansion would increase the consumption of gasoline and diesel proportionately with projected population and economic growth, the increase would be accommodated within the projected growth as part of the energy projections for the state and the region and would not require the construction of new regional energy production facilities.

With regard to the restoration of Viking Ranch and construction of Well No. 3 and the associated pipeline, regulatory requirements pertaining to fuel efficiency would also apply to any construction equipment used in these activities. And minimal equipment use would be required for the long-term maintenance of the restoration site and the well and pipeline infrastructure, and therefore energy use would be negligible.

The preservation and long-term management of the Old Kane Springs Road preservation site would involve minimal energy resources at all stages of the project, since no new construction, development, or land use is proposed on the site. Long-term management activities (e.g., trash pickup) would require minimal energy resources.

For these reasons, the potential of the Quarry expansion, development of Well No. 3 and the associated pipeline, and Viking Ranch restoration to result in a wasteful or inefficient use of energy would be less than significant.

b) **No Impact.** The State of California has taken steps to increase the efficiency of vehicles and other construction equipment to provide more renewable energy. Legislation is routinely passed and codified to address climate change and clean energy production. The applicable local energy plan is the *County of Imperial General Plan Renewable Energy and Transmission Element* (Imperial County 2015). There are no features of the Quarry expansion, development of Well No. 3 and the associated pipeline, preservation of the Old Kane Springs Road Site, and restoration of the Viking Ranch site that would prevent compliance with any renewable energy or energy efficiency requirements of state or local plans. There would be no impact.

G. GEOLOGY AND SOILS

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving:				
1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☒	☐
2) Strong Seismic ground shaking?	☐	☐	☒	☐
3) Seismic-related ground failure, including liquefaction and seiche/tsunami?	☐	☐	☒	☐
4) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in the latest Uniform Building Code, creating substantial direct or indirect risk to life or property?	☐	☐	☒	☐

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The project site is located in the vicinity of three major fault zones: 1) the San Andreas fault zone to the northeast, which runs along the east side of the Salton Sea, 2) the San Jacinto fault zone which traverses western Imperial County through the Peninsular Ranges and into the Borrego Valley and West Mesa, and 3) the Elsinore fault zone to the southwest. The Coyote Creek fault, which runs through Ocotillo Wells and skirts the Fish Mountains east of the Quarry, is associated with the San Jacinto fault zone. The Quarry is located between the San Jacinto and Elsinore fault zones.

The 2008 EIR/EIS concluded that the expanded Quarry would not be subject to substantial risk of deep-seated landslides, rockfalls, or surficial instability based on the characteristics of the gypsum deposit, which is nearly pure, with no weak clay or silt intercalations observed in natural or mined exposures. However, the 2008 EIR/EIS did indicate that reclaimed slopes could be subject to significant slope instability due to the close proximity of the Coyote Creek branch of the San Jacinto fault and the relatively long period of exposure expected for reclaimed quarry slopes. In order to ensure long-term slope stability within the quarry, the following mitigation measures were included:

> **Mitigation Measure 3.2-1a**: Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet.
>
> **Mitigation Measure 3.2-1b**: Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.
>
> **Mitigation Measure 3.2-1c**: Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.

The 2008 EIR/IES did not identify any potentially significant impacts related to geologic, soils, or seismic hazards and the development of the proposed Well No. 3 and associated pipeline.

With regard to paleontological resources, the 2008 EIR/EIS determined that impacts related to paleontological resources from the USG Expansion/Modernization Project would be less than significant and no mitigation was required.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to geology, soils, or paleontological resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: The primary change in circumstance related to geology, soils, and paleontological resources was that Paleontological Resources Preservation Act (PRPA) was signed into law on March 30, 2009 (Public Law 111-11, Title VI, Subtitle D; 16 U.S.C. §§ 470aaa - 470aaa-11). PRPA directs the Department of Agriculture (U.S. Forest Service) and the Department of the Interior (National Park Service, BLM, Bureau of Reclamation, and Fish and Wildlife Service) to implement comprehensive paleontological resource management programs. With passage of the PPRA, Congress officially recognizes the importance of paleontological resources on federal lands by declaring that fossils from federal lands are federal property that must be preserved and protected using scientific principles and expertise. The PRPA provides: 1) uniform definitions for "paleontological resources" and "casual collecting"; 2) uniform minimum requirements for paleontological resource use permit issuance; 3) uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from federal lands; and 4) uniform requirements for curation of federal fossils in approved repositories.

New Information: There is no new information related to the potential for unstable geologic or soils conditions to occur at the Quarry. The Quarry is inspected and monitored annual in accordance with Imperial County and Division of Mine Reclamation requirements. Slopes are evaluated for gross and surficial stability under both static and seismic conditions. In addition to conducting quantitative analyses, the slopes are visually evaluated by a qualified geologist for erosion, over-excavation, and signs of adverse geologic conditions. The annual inspection reports were reviewed as part of the 2019 SEIS. No change in conditions that could alter the finding of the 2008 EIR/EIS were noted.

A Paleontological Technical Study was completed as part of the 2019 SEIS (Paleo Solutions, Inc. 2018). The study indicates that excavations in Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); and Holocene-age Lake Cahuilla beds (Qlc) may well result in an adverse direct impact to scientifically important paleontological resources. Excavations within previously disturbed sediments, artificial fill, Fish Creek Gypsum (Tfc), alluvial terrace deposits (Qt), or alluvium (undivided) (Qa) are unlikely to uncover significant fossil vertebrate remains; furthermore, any recovered resources from previously disturbed sediments or artificial fill will lack stratigraphic context. As described in the Paleontological Technical Study, the Quarry is underlain primarily by low-sensitivity alluvium (undivided) (Qa), Fish Creek Gypsum (Tfc), and undivided intrusive igneous rocks (gr), but portions of the Quarry are underlain by the more sensitive Elephant Trees Formation

(Tse). Similarly, the majority of the proposed Well No. 3 site and associated pipeline alignment are predominantly underlain by alluvium (undivided) (Qa); however, a portion of the pipeline right-of-way within the Quarry would cross an area underlain by the Elephant Trees Formation (Tse). In addition, the study notes that younger deposits may shallowly overlie older in situ sedimentary deposits. Therefore, grading and other earthmoving activities may potentially result in significant adverse direct impacts to paleontological resources throughout portions of the USG Expansion/Modernization Project area, with exceptions for areas underlain by Mesozoic-age undivided intrusive igneous rocks, which have a very low paleontological potential. Based on the results of the Paleontological Technical Study, the 2019 SEIS recommends the implementation of the following mitigation measure to address potential impacts to paleontological resources at the proposed Well No. 3 site and associate pipeline alignment:

> **Mitigation Measure 3.2-3**: Once the pipeline alignment is located and staked, a pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the area associated with the Proposed Action. For any areas where potential resources cannot be avoided by the pipeline construction, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) should be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.

Analysis Required: With regard to impacts related to geology, soils, and seismicity (checklist questions [a] through [e]), no additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant geology or soils impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. To ensure that potential impacts have been fully evaluated, the following impact analysis related to geology, seismicity, and soils is provided below. The preservation of the Old Kane Springs Road site and restoration of Viking Ranch are new proposed actions and require analysis, which is also provided below.

With regard to paleontological resources (checklist question [f]), new information available in the 2019 SEIS indicates the potential for paleontological resources to be encountered along the Well No. 3 site pipeline alignment and requires mitigation. The preservation of the Old Kane Springs Road site would not involve any ground disturbing activities that could impact paleontological resources; however, the restoration of the Viking Ranch site would involve grading and ground disturbance and therefore would have the potential to encounter paleontological resources depending on the depth of earthmoving activities and the paleontological sensitivity of the geologic formations that occur in the area. For these reasons, the County has determined that impacts related to paleontological resources should be analyzed in the SEIR.

a) **Less than Significant.** The preservation of the Old Kane Springs Road site would not involve any development beyond posting signs and installing gates to prevent unauthorized vehicle access to the area. Therefore, the proposed site preservation would not have the potential to result in substantial adverse effects, including risk of loss, injury, or death related to geologic, soils, or seismic hazards.

The project area Viking Ranch restoration site is located in a seismically active area and could encounter variable soils conditions. The development of the proposed pipeline would be required to comply with the applicable provisions of the California Building Code, which contains the state regulations for protecting structures from geo-seismic hazards and is updated on a triennial basis. Construction activities associated with the proposed pipeline and with the site preparation and maintenance of Viking Ranch would be subject to occupational safety standards for excavation and trenching, as specified in the California Safety and Health Administration regulations (Title 8 of the California Code of Regulations) and in Chapter 33 of the California Building Code. These regulations specify the measures to be used for excavation and trench work where workers could be exposed to unstable soil conditions. The expansion of the Quarry would not require additional employees. Therefore, the proposed project would not bring new people to the area and would not increase risk associated with injury or death due to geologic hazards. Similarly, once complete, the Viking Ranch restoration site would require only occasional worker visits associated with long-term maintenance of the site but would not develop buildings or include public facilities that would draw people to area. As described in the 2008 EIR/EIS, the expanded Quarry would not be subject to substantial risk of deep-seated landslides, rockfalls, or surficial instability based on the characteristics of the gypsum deposit, which is nearly pure, with no weak clay or silt intercalations observed in natural or mined exposures. Furthermore, the Quarry would continue to be subject to annual inspections that would address any change in geologic and soils conditions with the potential to result in slope instability. For these reasons, the potential of the development of Well No. 3 and the associated pipeline and potential of the restoration of the Viking Ranch site to result in substantial risks of loss, injury, or death due to geologic, soils, or seismic hazards would be less than significant.

b) **Less than Significant.** The operation of the Quarry is currently subject to, and would continue to be subject to, the Statewide General Permit for Storm Water Discharges Associated with Industrial Activities, Order 2014-0057-DWQ, NPDES No. CAS000001 (Industrial General Permit). Part 436 of this order provides the Mineral Mining and Processing Effluent Guidelines and Standards which pertain to the Quarry's operation. Under these guidelines/standards, dischargers are required to: eliminate unauthorized non-stormwater discharges; develop and implement a site-specific stormwater pollution prevention plan (SWPPP) (or amend an existing plan to incorporate additional project components); implement BMPs; conduct monitoring; compare monitoring results to numeric action levels; perform appropriate exceedance response actions when numeric action levels are exceeded; and certify and submit all permit registration documents. Changes under the new Industrial General Permit compared to the Industrial General Permit issued in 1997 are that stormwater dischargers are required to implement minimum BMPs; electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System; comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under CWA Section 303(d); design treatment control BMPs for flow- and volume-based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event. Compliance with the Industrial General Permit would prevent substantial erosion from occurring at the Quarry site during long-term operations. This impact would be less than significant.

Under SMARA a revegetation plan must be prepared and implemented as part of a reclamation plan for an operating quarry. Revegetation would follow a series of steps that can be varied over the life of the operation but are designed to produce tangible results. Revegetation efforts would use seeds and plants collected locally and supplemented, as needed, by seeds collected and stored by a contractor specializing in native plants. USG would salvage topsoil and growth media (most desert soils have little topsoil development; where there is no topsoil, the material in which the majority of the plant roots are growing is referred to as “growth media”) and stockpile this material for use in the revegetation effort. The salvaging and reuse of topsoil and growth media, and the subsequent revegetation of the Quarry slopes, would reduce the potential for the proposed Quarry expansion to result in substantial erosion or loss of topsoil to less than significant.

The construction of Well No. 3 and the associated pipeline would disturb more than 1-acre of ground surface and would therefore also be required to comply with the State Water Resources Control Board (State Water Board) NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (SWRCB Order 2009-0009-DWQ, as amended by 2010-0014-DWQ and Order 2012-0006-DWQ) referred to herein as the Construction General Permit. Similarly, the restoration of Viking Ranch would disturb more than 1-acre of ground surface and would also be required to comply with the Construction General Permit. The Construction General Permit would require preparation and implementation of a site-specific SWPPP for each site. A stormwater pollution prevention plan identifies all potential pollutants and their sources, including erosion and sediment sources, and must include a list of best management practices to reduce the discharge of construction-related stormwater pollutants. This would minimize the potential of the construction of Well No. 3 and the associated pipeline and the site preparation activities associated with restoration of the Viking Ranch to result in substantial erosion.

Upon completion of construction, all waterline/powerline construction areas would be restored to pre-project conditions, and the development of Well No. 3 would disturb a 1/8-acre area. Consequently, the development Well No. 3 and associated pipeline would not lead to a substantial loss of topsoil.

During site preparation at the Viking Ranch, the top 2 inches of soil would be set aside and used for the final grade. This would prevent the substantial loss of topsoil on the restoration site.

It is not anticipated that erosion control BMPs would be needed after vegetation has established in the restoration site. However, temporary BMPs such as burlap fiber rolls, silt fence, and burlap gravel bags would be maintained as needed for proper function until the site has reached Year 3, or until the Project Biologist has deemed the BMPs unnecessary. Once the site is stabilized by native vegetation the contractor would remove and dispose of temporary BMPs. If after year 3, there is active erosion or sedimentation within or directly adjacent to the project AND this may affect adjacent farmlands, the Project Biologist would assess the conditions and provide adaptive management recommendations including, but not limited to, weed free BMPs such as burlap encased straw wattles, fiber rolls or burlap gravel bags; and/or additional grading. The HMMP identified that significant erosion could occur at the southeast corner of the site where bed instability has occurred from land modification leading to a six-foot head cut. If left unchecked, the head cut would continue to migrate upstream into the restoration site resulting in erosion of the land surface and destabilization of the floodplain. Consequently, a grade structure is planned to be constructed in this area. The structure would be constructed of wood timbers and slats to retain the soil on the restoration site. The effect of the structure would be to retain the upstream channel bed to stabilize the head cut that is presently causing unnatural flow and erosion on the site. The structure would be built to withstand water flow over the top, creating a stable bed gradient upstream (within the restoration site) and allowing water to continue flowing to the lower elevation floodplain present downstream. Therefore, with development of the proposed grade structure and implementation of erosion and control BMPs during the 10-year maintenance and monitoring period proposed at the restoration site, the potential of the restoration of the Viking Ranch to result in substantial erosion would be less than significant.

The preservation of the Old Kane Springs Road site would involve posting of signs and the installation of gates to prevent unauthorized vehicle access. These activities do not have the potential to result in erosion or the loss of topsoil. There would be no impact.

c) **Less than Significant.** For the reasons described in “a” and based on continued compliance monitoring, the potential of the development of Well No. 3 and the associated pipeline and potential of the restoration of the Viking Ranch site to result in substantial risks of loss, injury, or death due to geologic, soils, or seismic hazards would be less than significant.

d) **Less than Significant.** For the reasons described in “a” and based on continued compliance monitoring, the potential of the development of Well No. 3 and the associated pipeline and potential of the restoration of the Viking Ranch site to result in creating substantial direct or indirect risk to life or property would be less than significant.

e) **No Impact.** The Quarry expansion, development of Well No. 3 and associated pipeline, preservation of the Old Kane Springs Road site, and restoration of the Viking Ranch site do not require the development of septic systems. There would be no impact.

f) **Potential Significant Impact.** The County has determined that, due to the new information available in the 2019 SEIS and due to the proposed earthmoving activities at the Viking Ranch restoration site, impacts related to paleontological resources should be analyzed in the SEIR.

H. GREENHOUSE GAS EMISSIONS

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b) Conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2006 Draft EIR/EIS did not evaluate Greenhouse Gas (GHG) Emissions because this was not yet identified as a topic that requires evaluation in the Appendix G, Environmental Checklist Form, of the CEQA Guidelines. However, the 2008 Final EIR/EIS provided an analysis of GHG emissions in response to public comments on the 2006 Draft EIR/EIS. The 2008 Final EIR/EIS notes that USG has taken specific actions to track, report and certify GHG emissions. In November 2006, USG voluntarily joined the California Climate Action Registry (CCAR), a group of distinguished public and private sector organizations taking demonstrated leadership on climate change. USG was the first building materials manufacturer to participate in this program. As a member, USG has worked with the CCAR to develop an annual GHG emission tracking, reporting and certification protocol, that USG is applying to all of its facilities, including the Project. In particular, USG is certifying its GHG emissions data for the facility with the CCAR.

The Plant and Quarry, as well as associated activities, have used a variety of fuels over time for mobile sources, powering the Plant and for Quarry operations. Under the CCAR emission reporting regime, direct emissions of GHG are generated at the USG Expansion/Modernization Project from sources that are owned or controlled by USG, and include stationary combustion (e.g., plant burner and emergency generators) and mobile combustion sources (e.g., company owned off-road equipment and vehicles). Additionally, the USG Expansion/Modernization Project accounts for indirect GHG emissions, which are generated by sources owned or controlled by other entities. These indirect sources are primarily from fossil fuel combustion at third party power plants. GHG emissions are typically measured in terms of pounds or tons of “carbon dioxide equivalent” (CO_2e). The following estimates of GHG emissions were provided:

- Maximum *direct* GHG emissions CO_2e associated with the USG Expansion/Modernization Project in comparison with the baseline year of 1998 are as follows: During the 1998 baseline, the facility generated approximately 72,200 tons of CO_2e per year. The proposed action will result in about 110,000 tons of CO_2e per year, which represents an increase of approximately 37,800 tons of CO_2e per year, from business as usual.

- Maximum *indirect* GHG emissions CO_2e associated with the USG Expansion/Modernization Project from the baseline year of 1998 are as follows: During the 1998 baseline, the facility generated approximately 14,000 tons of CO_2e per year. The Proposed action will generate approximately 23,700 tons of CO_2e per year, which represents an increase of approximately 9,700 tons of CO_2e per year, from business as usual.

The 2008 Final EIR/EIS notes that while USG Expansion/Modernization Project may emit up to a maximum of approximately 47,500 tons of additional (above baseline) CO_2e emissions per year (assuming business as usual) from both direct and indirect sources, the USEPA estimates 2005 national CO_2e emissions of 7,260.4 teragrams (i.e., million metric tons). Thus, the project's CO_2e emission increases represent less than 0.00000654 percent of the national CO_2e loading, and an even smaller percentage of the worldwide CO_2e loading. Consequently, the 2008 Final EIR/EIS concludes that it is not anticipated that the individual effect of the project's GHG emissions on the environment will be significant.

With regard to the USG Expansion/Modernization Project's cumulative contribution to GHG emissions, the 2008 Final EIR/EIS acknowledges that the project may emit up to a maximum approximately 47,500 tons additional CO_2e emission per year above baseline for both direct and indirect sources, but states that this increase could be below reasonably anticipated thresholds of significance (though none existed at the time of the 2008 EIR/EIS), even when considered cumulatively. Further, since the demand for wallboard remains strong, it is stated that no project alternative would lead to more wallboard production outside of California, perhaps in other states or countries with little or no emission controls when compared to California's requirements. Since California is globally acknowledged as having among the most stringent energy efficiency and emission control requirements, wallboard production outside California would generate more GHG emissions. Additionally, transportation of the products into California (whether by truck, rail, or ship) would produce even more GHG emissions from the burning of fuel associated with product transportation. On this point, USG has determined that "transportation of gypsum board accounts for over 10 percent of the embodied energy," associated with the product. Thus, the no project alternative would have greater environmental impacts then the emissions from the project.

Despite the limited potential impacts due to increased GHG emissions identified in the 2008 Final EIR/EIS, the following mitigation measure was identified to substantially lessen the potential for the Project to result in cumulative impacts on climate change:

> **Mitigation Measure 1**: USG has already acquired approximately $1.6 million in emission credits for the Project to meet applicable air quality standards. Similarly, to the extent necessary, USG will acquire recognized carbon credits to offset the project's increased GHG emissions.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to GHG emissions. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: GHG emissions must now be discussed under current CEQA Guidelines. With regard to IPAPCD requirements, in 2011, ICAPCD amended Rule 903 to add GHGs to the list of regulated pollutants. Rule 903 applies to any stationary source that would have the potential to emit air contaminants equal to or in excess of the threshold for a major source of regulated air pollutants. As part of the revised rule, stationary sources that exceed the de minimis emissions level of 20,000 tons of CO_2e per year in a 12-month period would need to meet recordkeeping and reporting requirements.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. Furthermore, the effect of GHG emissions is not new information under CEQA Guidelines Section 15162(a)(3) that was not known and could not have been known during the prior environmental evaluations (see e.g., *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, 196 Cal.App.4th 515, 524 (2011).

Analysis Required:

a) **Potentially Significant.** Although it is not anticipated that the GHG emissions from the Quarry expansion and Well No. 3 development and operation would increase relative to the emissions level analyzed in the 2008 EIR/EIS, the County has determined that impacts related to GHG emissions associated with the proposed restoration of the Viking Ranch and preservation of the Old Kane Springs Road sites should be analyzed in the SEIR.

b) **Potentially Significant.** For the reasons described in “a,” the proposed Quarry expansion could potentially conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

I. *HAZARDS AND HAZARDOUS MATERIALS*

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS found that, with the exception of potential impacts related to Ammonium Nitrate Fuel Oil (ANFO) used to blast mineral deposits free, potentially significant impacts related to the use, transport, and storage of petroleum products, solvents, and other hazardous materials at the Quarry would be reduced to a less-than-significant level through compliance with existing local, state, and federal regulations pertaining to hazardous materials, including the development and implementation of a site-specific Spill Prevision, Control, and Countermeasures Plan (SPCC). The Quarry expansion would not increase the rate of use of ANFO but would extend the time period that such explosives are used. The 2008 EIR/EIS notes that explosives could inadvertently ignite if stored or be used in an improper manner. In addition, the detonation of these explosives would create ground vibration, dust and may result in flying rock. However, under the Quarry expansion, explosives would continue to be managed in accordance with existing standards, such that little such risk occurs, as the components (ammonium nitrate and fuel oil) are stored separately and mixed directly only when the hole is filled for blasting. Out of an abundance of caution, the following mitigation measure was included in the 2008 EIR/EIS:

> **Mitigation Measure 3.10-1**: USG shall conform to the requirements of 27 CFR Part 55, particularly sections 55.204 – 55.217 and 55.220, and any local requirements that are more stringent than the federal regulations, for the storage and use of explosives.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to hazards and hazardous materials. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact to hazards and hazardous materials.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant hazards and hazardous materials impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to hazards and hazardous materials is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant.** Transportation, storage, and disposal/recycling of hazardous materials are extensively regulated at the local, state and federal levels. Current and future construction and operations are, and will be, required to be in compliance with these regulations. Under the proposed Quarry expansion, the SPCC would be updated to include the use and storage of hazardous materials in the Quarry expansion areas, although substantial changes in the use and storage of hazardous materials is not anticipated because mining and processing operations and facilities within the Quarry would remain similar to existing conditions. The operation of the proposed Well No. 3 and associated pipeline, and the long-term maintenance of the Old Kane Springs Road preservation site and Viking Ranch restoration site, would not require the routine use, transport, or storage of hazardous materials. Any incidental spills of hazardous materials that could occur during maintenance of the proposed Well No. 3 and associated pipeline would be controlled and addressed in accordance with the Quarry's Spill Prevention, Control, and Countermeasures Plan. Thus, the potential for the transportation, storage, and disposal/recycling of hazardous materials associated with the Quarry expansion, operation of Well No. 3 and the associated pipeline, and long-term maintenance of the Old Kane Springs Road preservation Site and Viking Ranch restoration site would be less than significant.

With regard to construction of Well No. 3 and the associated pipeline and with regard to the site preparation activities associated with the Viking Ranch restoration, hazardous materials that may be stored onsite during these activities would include fuel for construction equipment, paints, solvents, and/or other types of construction materials that may contain hazardous ingredients; no construction activities are proposed at the Old Kane Springs Road preservation site. The construction/grading contractors at these work sites would be required to comply with the federal Occupational Safety and Health Administration (OSHA) standards defined under Title 29 of the Code of Federal Regulations Section 1910, and the California Occupational Safety and Health Administration (Cal OSHA) requirements under California Code of Regulations, Title 8, which specify requirements for employee training, availability of safety equipment, accident prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. California Code of Regulations, Title 8 also includes requirements for accident and illness prevention programs and hazard communication program regulations that include worker safety training and hazard information requirements, procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparing health and safety plans to protect workers. Any transportation of hazardous materials to and from the work sites would occur on designated hazardous materials routes, by licensed hazardous materials handlers, as required, and would be subject to regulation by the California Highway Patrol and the California Department of Transportation. In addition, the HMMP requires equipment to be checked for fluid leaks prior to operation and repaired as necessary. A spill kit for each piece of construction equipment is required to be onsite and must be used in the event of a spill. Compliance with existing regulations and with the HMMP avoidance and minimization measures pertaining to hazardous materials would reduce any risk from the routine transport, use, or disposal of hazardous materials during construction of Well No. 3 and during site preparation activities at the Viking Ranch restoration site to less than significant.

b) **Less than Significant.** For the reasons described in "a" and based on continued compliance monitoring, the Quarry expansion will not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

c) **No Impact.** Neither the project area, preservation site, or restoration site are located within 1/4-mile of a school.

d) **No Impact.** Neither the project area, preservation site, or restoration area are located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) **No Impact.** Neither the project area, preservation site, nor restoration area are located within an airport land use plan or within 2-miles of a public use airport. There would be no impact related to these topics.

f) **Less than Significant.** The Quarry and proposed Well No. 3 and the associated pipeline alignment are located in an undeveloped and unpopulated desert area. The existing rail line and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the Quarry and proposed well. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3. The unpaved dirt access road could be disturbed during the 10-week pipeline construction period, but it is not a critical route for emergency access or emergency personnel or for evacuation, and vehicular access to public desert areas along the road would be maintained at all times. Split Mountain Road, which is the only road to the Quarry, would not be disturbed by the development of the pipeline and vehicular access to the Quarry would be maintained at all times. Therefore, the potential of the Quarry expansion and development of Well No. 3 and the associated pipeline to impair implementation or physically interfere with emergency response or emergency evacuation plans would be less than significant.

The restoration of the Viking Ranch site would occur on undeveloped land in a rural area and is accessed from an unpaved road. The implementation of the restoration program would not alter or block any roadways. Similarly, the preservation of the Old Kane Springs Road site would not impact roadways. There would be no impact to emergency response or evacuation plans from the proposed preservation and restoration actions.

g) **Less than Significant.** The proposed project would not increase the number of people living or working in the project area, in the Old Kane Springs Road preservation Site, or in the Viking Ranch restoration site. The development of Well No. 3 and the associated pipeline would develop structures located primarily underground and therefore not readily exposed to wildfire. In addition, the Quarry, Well No. 3 site, and pipeline alignment and surrounding areas are sparsely vegetated and have a low risk of wildfire. The Viking Ranch restoration does not propose the development of structures beyond a grade structure that would be constructed of wood timbers, in the Coyote Creek wash and in a sparsely vegetated area and therefore not at substantial risk of fire. The Old Kane Springs Road preservation would involve signage posting and gate installation, which are not activities or features that could generate a substantial risk of fire. Therefore, the potential of the proposed project to expose people or structures to a significant risk of loss, injury or death involving wildland fires would be less than significant.

J. HYDROLOGY AND WATER QUALITY

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☒	☐	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☒	☐	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;	☒	☐	☐	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☒	☐	☐	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;	☒	☐	☐	☐
(iv) mpede or redirect flood flows?	☒	☐	☐	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☒	☐	☐	☐

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

Surface Water

The affected environment in the vicinity of the Quarry is an active open pit gypsum mine within an ephemeral desert wash tributary to Fish Creek Wash. Based on hydrology reports completed for the USG Expansion/Modernization Project (Joseph E. Bonadiman & Associates 2004, cited in Imperial County and U.S. Bureau of Land Management 2006), the 2008 EIR/EIS found that the expansion of the Quarry would generally not produce a significant reduction of runoff of tributaries to Fish Creek because 1) the Quarry expansion is adjacent to a mountain range that provides the smallest contribution of rainfall in the entire drainage area due to topographic and geologic conditions; and 2) rainfall east of the Quarry or within the Quarry will percolate into the ground, recharging the water table. It was concluded that the proposed Quarry expansion will have no effect on the natural groundwater process, and groundwater would continue to transmigrate towards Fish Creek along the standard pattern. However, the main drainage patterns from the western mountain range of the drainage area produces the largest flow rate tributary to Fish Creek, potentially causing a disruption of periodic flows at the Quarry site. Consequently, the 2008 EIR/EIS includes the following mitigation measure to address the disruption in flow:

> **Mitigation Measure 3.3-7:** An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.

Groundwater

The 2008 EIR/EIS indicates that the existing and proposed Quarry water wells are located within the Borrego Valley Groundwater Basin (7-24). The Borrego Valley Groundwater Basin is distinctly different from the Coyote Wells Valley Groundwater Basin (7-29) in which the USG production wells for the Plant are located. The Borrego Valley Groundwater Basin consists of sedimentary deposits derived from the surrounding mountain ranges. Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 feet below ground surface (bgs) in the center of the basin with total dissolved solids levels reported in the range of 8,000 parts per million (ppm). An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 feet bgs at some locations with TDS levels reported in the range of 1,400 ppm.

The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds.

The 2008 EIR/EIS determined that the increase in pumping at the Quarry that would result from development and operation of Well No. 3 would not result in the substantial depletion of the Borrego Valley Groundwater Basin. This is because the proposed increase in pumping would be minimal relative to the existing use of groundwater for agriculture and relative to the natural rate of discharge from the basin. The proposed project would increase groundwater pumping in the Borrego Valley Groundwater Basin from the current permit limit of approximately 7.8 AF/yr to approximately 26 AF/yr. In contrast, the natural discharge from the Borrego Valley Groundwater Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. Therefore, the potential of the proposed project to have a perceptible effect on the existing water levels or rate of decline of the basin was found to be less than significant.

Additionally, water quality data from the USG test hole also demonstrates that the new well would tap groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the potential of the proposed project to affect the flow of the springs was found to be less than significant.

The 2008 EIR/EIS determined that the potential of pumping at Well No. 3 to degrade water quality by causing the vertical migration of saline water from the shallow aquifer to the deeper aquifer would be less than significant. This is because the USG test hole drilling results indicate that the shallow aquifer is not present in the area of the proposed Well No. 3.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to hydrology and water quality. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: The Borrego Valley Groundwater Basin (7-24) was modified in 2016 by the California Department of Water Resources (DWR). The basin was divided into two subbasins: Borrego Valley—Borrego Springs (7-24.01) and Borrego Valley—Ocotillo Wells (7-24.02) (DWR 2021a). The active USG Quarry Well No. 2 and the proposed Quarry Well No. 3 are located in the Ocotillo Wells subbasin.

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package—Assembly Bill 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley)—collectively known as the

Sustainable Groundwater Management Act (SGMA), which requires governments and water agencies of high- and medium-priority basins to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge. Under SGMA, these basins should reach sustainability within 20 years of implementing their sustainability plans. Through SGMA, DWR provides ongoing support to local agencies through guidance, financial assistance, and technical assistance. SGMA empowers local agencies to form Groundwater Sustainability Agencies (GSAs) to manage basins sustainably and requires the preparation of groundwater sustainably plans (GSPs) for crucial (i.e., medium to high priority) groundwater basins in California. Low- and very low-priority basins may adopt these plans, but are not required to, and neither are adjudicated basins. The project area is located within the Ocotillo Wells subbasin of the Borrego Valley Groundwater Basin, which has been designated a very low priority basin (DWR 2021b).

In September 2015, the Imperial County Board of Supervisors provided notice to DWR that Imperial County had resolved to assume the role of GSA for all groundwater basins underlying the County. In its resolution to become a GSA (Imperial County Board of Supervisors Resolution No. 2015-122), the County expressed its commitment to sustainable groundwater use and cited its jurisdiction over groundwater basins county-wide. The County also cited its long experience and background in groundwater management and monitoring, including the County Groundwater Management Ordinance.

As described under Section II," Environmental Checklist Form," Item 10, "Project Description," the Settlement Agreement replaced Mitigation Measures 3.3-1 and 3.3-2 adopted in the 2008 EIR/EIS with new mitigation measures (Mitigation Measures 3.3-1-A through 3.3-1-G). The measures are intended to ensure that project impacts on individual groundwater wells within the Coyote Wells Groundwater Basin are less than significant. The Quarry is not located within the Coyote Wells Groundwater Basin. Therefore, the Settlement Agreement mitigation measures are not applicable to this analysis.

New Information: A *Jurisdictional Delineation* (Hernandez Environmental Services 2016), *Hydrologic and Water Quality Study* (Hydrology Study) (Dudek 2018), and *Update on Groundwater Conditions Memorandum* (Todd Groundwater 2018) were completed as part of the 2019 SEIS.

The *Jurisdictional Delineation* identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The *Jurisdictional Delineation* noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The *Jurisdictional Delineation* recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction.

The Hydrology Study evaluated the existing and proposed hydrology and water quality conditions for the Quarry watershed. The study focused on changes in hydrology due to mine expansion activities under the USG Expansion/Modernization Project. Based on the results of the study, it was recommended that the berm required by Mitigation Measure 3.3-7 of the 2008 EIR/EIS should be armored along the westerly bank with rock riprap to decrease the likelihood and severity of erosion damage to the berm. The Hydrology Study did not evaluate the impacts of the development of the proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.

The *Update on Groundwater Conditions Memorandum* was developed to assess groundwater conditions in the Coyote Wells Valley, Borrego Valley-Borrego Springs, Borrego Valley-Ocotillo Wells, and Ocotillo-Clark Valley groundwater basins, and to identify whether changes in the groundwater conditions of these basins may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. With regard to the Borrego Valley-Ocotillo Wells subbasin, which the existing Quarry Well No. 2 and proposed Well No. 3 are located, the study nodes that information on pumping in Ocotillo Wells is minimal, but the subbasin likely has very limited pumping. DWR estimated pumping of 256 AFY as part of its 2018 SGMA Basin Prioritization Process and Results (DWR 2021b). The study concludes that it is unlikely that the San Sebastian Marsh groundwater depletion is affected by current pumping at Well No. 2 because of the relatively large distance of more than seven miles from the San Sebastian Marsh; because both Well No. 2 pumps from the deeper aquifer; and because the San Sebastian Marsh is located within the Ocotillo-Clark Valley groundwater basin, and the shared boundary between the Ocotillo Wells subbasin and Ocotillo-Clark Valley groundwater basin is the trace of the Coyote Creek Fault and Superstition fault, which are regarded as barriers to groundwater flow. Based on the distance from the marsh, relatively low rate of pumping, and the presence of intervening faults and aquitards, the study concluded that pumping at Quarry Well No. 2 is unlikely to have caused changes in San Felipe Creek and the San Sebastian Marsh. The study also notes that other pumping in the basin is ongoing and minor, and that any changes in the basin since 2008 do not change the findings in the 2008 EIR/EIS.

Based on the results of the *Jurisdictional Delineation*, the 2019 SEIS recommends new mitigation that requires the restoration and preservation of offsite properties with similar hydrologic functions as the Quarry drainages to off-set the impacts to jurisdictional drainages within the Quarry.

Analysis Required:

a) **Potentially Significant.** The County has determined that, due to the new information available in the *Jurisdictional Delineation*, Hydrology Study, and *Update on Groundwater Conditions Memorandum*, and due to changes in hydrologic conditions that would result from the proposed restoration of Viking Ranch, impacts related to hydrology and water quality should be analyzed in the SEIR.

b) **Potentially Significant.** For the reasons described in “a,” impacts related to the proposed Quarry expansion impacts related to decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin should be analyzed in the SEIR.

c) **Potentially Significant.** For the reasons described in “a,” impacts related to the proposed Quarry expansion impacts related to altering the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces should be analyzed in the SEIR.

d) **Potentially Significant.** For the reasons described in “a,” impacts related to the proposed Quarry expansion impacts related to flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation should be analyzed in the SEIR.

e) **Potentially Significant.** For the reasons described in “a,” impacts related to the proposed Quarry expansion impacts related to the project potentially conflicting with or obstructing implementation of a water quality control plan or sustainable groundwater management plan should be analyzed in the SEIR.

K. LAND USE AND PLANNING

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The project alignment is located in an undeveloped area, with the exception of the Quarry facilities. However, portions of the lands surrounding the Quarry are used for recreational activities including hiking, backpacking, horseback riding, shooting, and camping. These activities occur primarily on two distinct public lands, the Anza-Borrego Desert State Park and the Fish Creek Wilderness Area, and within the Fish Creek Wash. The 2008 EIR/EIS found that the potential of the USG Expansion/Modernization Project, which includes the proposed Quarry expansion and development of Well No. 3 and associated pipeline, to be incompatible with existing land uses would be less than significant. The 2008 EIR/EIS also found that the USG Expansion/Modernization Project would not be incompatible with Wilderness Area land use plans and policies.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to land use. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Various Imperial County General Plan Elements have been revised since the approval of the 2008 EIR/EIS to the present. Refer to the “Changed Circumstances” subsection of each topic section for a summary of changes in land use plans, policies, and regulations relevant to each topic.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant land use impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to land use is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis.

a) **No Impact.** Neither the project area, preservation site, or restoration area are located in an area that could divide a community.

b) **Potentially Significant.** The County has determined that, due to the new information available in the 2019 SEIS, impacts related to land use should be analyzed in the SEIR.

L. MINERAL RESOURCES

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

2008 EIR/EIS notes that operations associated with the USG Expansion/Modernization Project, which includes the proposed Quarry Well No. 3 and associated pipeline, would extract mineral resources from the Quarry. This would result in an irreversible and irretrievable development of known gypsum reserves. However, the development of these gypsum reserves would not preclude the future use of remaining reserves; the mineral resource would be made available for use by society through the quarrying and processing activities.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to mineral resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to mineral resources.

New Information: The 2019 SEIS indicates that BLM prepared a Mineral Report in 2000 as part of a mineral patent application submitted by USG. The report concluded that the portion of the gypsum deposits on public lands constituted a valuable mineral reserve. This report further recommended that the mineral patents proceed forward to patenting. Eighteen placer mining claim patents were granted in 2008 (Patent No. 04-2008-0010; also refer to Chapter 2.0), transferring into private ownership 304.57 acres of placer mining claims previously identified as public land in the 2006 Draft EIR/EIS and 2008 Final EIR/EIS. These claims are no longer subject to regulatory review by the BLM for purposes of mineral extraction. Other aspects of the affected environment related to mineral resources and described in the previous documents are still accurate and have not changed.

Fifteen active mill site claims remain at the Quarry and are subject to regulatory compliance and review by the BLM.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to mineral resources or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts related to mineral resources is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant Impact.** The 2008 EIR/EIS indicates that the Fish Creek Mountains gypsum deposit constitutes the largest reserves of this commodity in California. More than 31.2 million tons of gypsum has come from this deposit; of that, 30.1 million tons have been extracted by USG since 1945. Since 1984, an average of one million tons of gypsum is produced by USG's Plaster City Plant each year. The 2019 SEIS states that permitted quarrying activities would continue at the maximum production of 1.92 million tons per year until the resource is exhausted. The proposed project would facilitate the production of these mineral resources by providing water to support the Quarry, thereby making the mineral resources available for beneficial use. The project's support of the development of these mineral resources is not considered adverse in terms of the County's CEQA review because the Quarry site is being used for the extraction of mineral resources. The development of a water well and associated pipeline would not preclude future additional mineral extraction within the Quarry if the applicant and the County deem such additional extraction to be desirable. Thus, impacts to mineral resources would be less than significant.

   The California Surface Mining and Reclamation Act (SMARA) of 1975, was enacted in response to land use conflicts between urban growth and essential mineral production. SMARA requires the State Geologist to classify land into Mineral Resource Zones (MRZs) based on the known or inferred mineral resource potential of that land. The Old Kane Springs Road preservation site and Viking Ranch restoration site are not located within an area that has been mapped by the program by a Mineral Land Classification study. No locally important mineral resources are identified at these sites by the San Diego County General Plan (San Diego County 2011). Consequently, the restoration of the Viking Ranch site and the proposed restrictions on future development of the preservation site and restoration site, including future development of mineral resources on the site, would not result in the loss of availability of a known mineral resource or the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. Thus, impacts to mineral resources from the proposed preservation and restoration actions would be less than significant.

b) **Less than Significant.** For the reasons described in “a,” the Quarry expansion will not result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

M. NOISE

Would the project result in:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS determined that all potential impacts related noise under the USG Expansion/ Modernization Project, which includes the Quarry expansion and the development of Well No. 3 and the associated pipeline, would be less than significant. This is because of the distance between the Quarry expansion activities and off-site sensitive receptors and because the operations at the Quarry will not significantly change after expansion. Such noise would be similar to that of the existing operations and to that normally experienced with surface quarrying operations. No mitigation was required.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to noise and vibration. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to noise and vibration.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant noise and vibration impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to noise and vibration is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is provided below.

a) **Less than Significant.**

Quarry Expansion and Development of Well No. 3 and Associated Pipeline

The proposed project would expand an existing Quarry but would not substantially alter the mining activities, facilities, or equipment on the Quarry site. Furthermore, the Quarry is located several miles south of the nearest residences, and the expansion would move mining activities further from the residences. Noise exposure of potential sensitive receptors would be limited to recreational visitors to off-site wilderness areas near quarrying activities if they happen to be in close proximity toe equipment movement or blasting. However, this noise would be similar to that associated with existing Quarry activities and would not represent a substantial noise increase. Therefore, as indicated in the 2008 EIR/EIS, the quarry expansion would not generate a substantial increase in ambient noise levels.

The proposed project would also develop a groundwater well and associated pipeline. The construction of the proposed Well No. 3 and associated pipeline would occur over a 10-week period, and would involve the use of construction equipment, such as bulldozers, excavators, and water trucks, that would be a source of noise and vibration along the project alignment. The project alignment is located in an undeveloped area. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3. At these distances construction noise and vibration would not be perceptible. Portions of the lands surrounding the Quarry are used for recreational activities including hiking, backpacking, horseback riding, shooting, and camping. However, there are no designated trails within several miles of the project alignment, and any noise generated in these areas would be short-term. Upon completion of construction, the proposed utilities would not be a substantial source of noise or vibration. Therefore, the potential of the construction and operation Well No. 3 and the associated pipeline to generate substantial noise or excessive vibration would be less than significant.

Viking Ranch Site Restoration

The primary source of noise generated by the Viking Ranch restoration at noise-sensitive land uses would be temporary noise associated with the use of construction equipment during site preparation activities. During the long-term maintenance of the restoration site, noise would be limited to occasional worker visits and is not anticipated to require the use of equipment that could generate high noise or vibration levels, such as construction equipment. The nearest residence to the restoration site is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

The San Diego County General Plan Noise Element (San Diego County 2011) establishes noise/land use compatibility standards and outlines goals and policies that can be used to achieve these standards. The first section of the Noise Element characterizes the noise environment in the unincorporated County and provides the context for the County's noise land use compatibility guidelines and standards. The second section describes the County's goals for achieving the standards and introduces policies designed to implement the goals. Implementation measures associated with the Noise Element are included separately in the Implementation Plan for the County's General Plan.

The County of San Diego Noise Ordinance, Section 36.408, restricts construction activity to the hours of 7 a.m. to 7 p.m. on Mondays through Saturdays. Construction is prohibited on Sundays and holidays. In addition, Section 36.409 states that construction noise levels may not exceed an eight-hour average sound level of 75 dBA when measured at the boundary line of the property where the noise source is located or on occupied property where the noise is being received. Section 36.410 contains additional noise limits that apply to impulsive construction noise, such as rock crushing, pile driving, or other such activity; however, as no impulsive construction is anticipated at the restoration site.

The nearest sensitive receptor to the Viking Ranch restoration site is a rural residence located approximately 900 feet west of the southwest corner of the site. The typical construction noise levels associated with ground clearing and excavation are shown in Table 2, "Construction Noise, dBA L_{eq}." The table also shows the estimated noise levels at the nearest sensitive receptor. As shown in Table 9, the construction noise levels measured as hourly L_{eq} at the nearest residence to the project site would be well below 75 dBA eight-hour L_{eq} standard. Furthermore, this is the most conservative scenario with all equipment operating at the southwest corner of the restoration site, when typically, the equipment would be operating across different locations of the site, at distances of up to 0.9 miles from the nearest sensitive receptor. Therefore, the potential of the restoration of Viking Ranch to generate a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local noise ordinance would be less than significant.

Table 2
Construction Noise, dBA L_{eq}

Construction Phases	Industrial Projects	Estimated Noise Level at Nearest Sensitive Receptor
Ground Clearing	84	59
Excavation	89	64

Source: Typical construction noise levels are based on Table 2-15 of U.S. Environmental Protection Agency (USEPA) 1973, Legal Compilation on Noise, Volume 1. Noise levels at nearest sensitive receptors were estimated based on the equations and methodology in Table 4-30 in the Transit Noise and Vibration Impact Assessment Manual (Federal Transit Administration [FTA] 2018).
Notes: The noise levels presented are typical of projects with all pertinent equipment present at the site.

Vibration attenuates rapidly with distance. The restoration of Viking Ranch would not involve equipment or activities that could generate perceptible vibration at the nearest sensitive receptor, which is located more than 900 feet from the southwest corner of the restoration site. Typically, only impulsive sources of vibration, such as blasting or pile driving, are perceptible at these distances. The restoration activities do not require blasting or pile driving. Therefore, the potential of the restoration of Viking Ranch to generate excessive groundborne vibration or groundborne noise would be less than significant.

Old Kane Springs Road Site Preservation

The preservation of the Old Kane Springs Road site would not involve construction activities, and the long-term maintenance operational activities (e.g., trash pickup) would not have the potential to generate substantial noise and vibration. These impacts would be less than significant.

b) Less than Significant. For the reasons described in “a,” the Quarry expansion will not be generating excessive groundborne vibration or groundborne noise levels.

c) No Impact. Neither the project area, Old Kane Springs Road preservation site, or Viking Ranch restoration site are located in the vicinity of a private airstrip, within an airport land use plan, or within 2-miles of a public use airport. There would be no impact related to this topic.

N. POPULATION AND HOUSING

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The previous environmental review process did not identify Population and Housing as a resource topic with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to population and housing. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to population and housing.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to population and housing or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts to population and housing is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) No Impact. The Quarry expansion would not involve operational changes that would increase the number of employees. The construction of Well No. 3 and associated pipeline would involve a 10-week construction period and would not be of sufficient size or duration to cause construction workers from outside the region to relocate to Imperial County. Similarly, the restoration of Viking Ranch would bring temporary workers to the site, but the activities are not of sufficient size or duration to cause workers from outside the region to relocate to Imperial County. During project operation, the proposed well and pipeline would be maintained by existing Quarry personnel and by outside contractors, as needed. In addition, the Old Kane Springs Road preservation site and Viking Ranch restoration site would be monitored and maintained as described in the HMMP and would require only periodic site visits by a single natural lands manager. Water from Well No. 3 would be used only by the existing Quarry and would not be available for use by new homes or businesses. Therefore, the project would not induce substantial unplanned population growth in the area.

b) No Impact. The nearest residences to the Quarry and to the proposed Well No. 3 and associated pipeline alignment are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3. The nearest residences to the Old Kane Springs Road preservation site are rural residences located approximately 1 mile to the northwest. The nearest residence to the Viking Ranch restoration site is a rural residence located approximately 900 feet southwest of the southwest corner of the site. Therefore, the project would not displace people or housing.

O. PUBLIC SERVICES

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
1) Fire Protection?	☐	☐	☐	☒
2) Police Protection?	☐	☐	☐	☒
3) Schools?	☐	☐	☐	☒
4) Parks?	☐	☐	☐	☒
5) Other Public Facilities?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The previous environmental review process did not identify Public Services as a resource topic with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to public services. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to public services.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to public services or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts to public services is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **No Impact.** The Quarry expansion, development of Well No. 3 and the associated pipeline, Old Kane Springs Road site preservation, and Viking Ranch site restoration would not increase the number of people living or working in the vicinity of the project site or restoration site that could require new or expanded police, fire, school, parks, or other public services and facilities. Additionally, the Quarry expansion, development of Well No. 3 and the associated pipeline, and Viking Ranch restoration do not contain any new features that would increase the need for fire protection or police protection relative to existing conditions. There would be no impact.

P. RECREATION

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Would the project increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The previous environmental review process did not identify Recreation as a resource topic with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to recreation. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to recreation.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to recreation or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts to recreation is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) No Impact. The nearest recreational resources to the Quarry and Well No. 3 and the associated pipeline are the Fish Creek Wilderness Area and Anza-Borrego Desert State Park. The proposed Quarry expansion and development of Well No. 3 and the associated pipeline would not increase the number of people living or working in the area, and therefore would not have the potential to increase the use of existing recreational areas such that physical deterioration would occur or be accelerated. The nearest recreational resource to the Old Kane Springs Road preservation site and Viking Ranch restoration site is Anza-Borrego Desert State Park. The restoration and preservation of these sites would not increase the number of people living or working in the area. There would be no impact.

b) No Impact. The Quarry expansion, development of Well No. 3 and the associated pipeline, Old Kane Springs Road site preservation, and Viking Ranch site restoration do not include recreational facilities and do not propose activities or land uses that would not require the construction or expansion of recreational facilities that could have an adverse effect on the environment. There would be no impact.

Q. TRANSPORTATION

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with the CEQA Guidelines Section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS determined that the expansion of the Quarry under the USG Expansion/Modernization Project, which includes the proposed Well No. 3 and associated pipeline, would not result in impacts related to transportation because it would not result in an increase in traffic on roads.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to transportation. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: SB 743, which was signed into law in 2013, initiated an update to the CEQA Guidelines to change how lead agencies evaluate transportation impacts under CEQA. Starting on July 1, 2020, agencies analyzing the transportation impacts of new projects must now look at a metric known as vehicle miles traveled (VMT) instead of Level of Service (LOS), which is a measure of automobile delay. VMT measures how much actual auto travel (additional miles driven) a proposed project would create. If the project adds excessive car travel, the project may cause a significant transportation impact.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant transportation impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to transportation is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant.** The construction of Well No. 3 and the associated pipeline would generate limited, temporary construction worker and equipment and materials traffic during construction of the proposed Well No. 3 and associated pipeline during the 10-week construction duration. Similarly, the restoration of Viking Ranch would generate temporary worker trips and trips associated with the movement of equipment and materials during site preparation and maintenance. Upon completion of construction of Well No. 3 and the associated pipeline, and upon completion of the mitigation work plan under the restoration program, vehicular traffic would consist of trips generated by periodic maintenance and monitoring activities. Similarly, the preservation of the Old Kane Springs Road site would require an initial visit to the site by a small number of workers to post signage and install gates, and then only periodic visits to the site for long-term management activities (e.g., trash pickup). The Quarry expansion would not change the number of automobile or truck trips generated to and from the Quarry. The temporary traffic generated during well/pipeline construction and restoration site preparation, and the low levels of traffic associated with period maintenance and monitoring activities, would not have the potential to conflict with a program plan, ordinance or policy addressing the circulation system, or to generate an increase in VMT from automobile trips that would conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b). Therefore, these impacts would be less than significant.

b) **Less than Significant.** For the reasons described in “a,” the Quarry expansion would not conflict or be inconsistent with the CEQA Guidelines Section 15064.3, subdivision (b).

c) **No Impact.** The Quarry expansion, development of Well No. 3 and the associated pipeline, preservation of the Old Kane Springs Road site, and restoration of the Viking Ranch site would not physically alter any roadways or generate traffic incompatible with surrounding land uses, which already include Quarry-related traffic. There would be no impact.

d) **No Impact.** Split Mountain Road is the primary access road to the Quarry. The Quarry expansion and development of Well No. 3 and the associated pipeline would not alter or block Split

Mountain Road. The Viking Ranch site and Old Kane Springs Road Site are both located in a rural area and accessed from unpaved roads. The restoration and preservation of these sites would not alter or block any roadways. There would be no impact.

R. TRIBAL CULTURAL RESOURCES

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place or object with cultural value to a California Native American tribe, and that is:				
(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as define in Public Resources Code Section 5020.1(k), or	☒	☐	☐	☐
(ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

As part of the 2008 EIR/EIS, a sacred lands search was completed and a list of Native American contacts for the USG Expansion/Modernization Project area was obtained from the Native American Heritage Commission. The sacred lands search did not identify any cultural resources or culturally sensitive areas either within or near the USG Expansion/Modernization Project area. All groups and/or individuals on the list provided by the Native American Heritage Commission were contacted regarding the USG Quarry expansion and water pipeline replacement projects. Native American consultation, however, was not conducted as an official Government-to-Government consultation.

The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to unknown cultural resources (this mitigation measure also applies to Topic V. Cultural Resources):

> **Mitigation Measure 3.8-3:** If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. An archaeologist qualified by the Society of Professional Archaeologists (SOPA) shall be deemed “qualified” for purposes of this mitigation measure. The services of a qualified archaeologist may be secured by contacting the Center for Public Archaeology—California State University, Fullerton or a member of SOPA.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to tribal cultural resources. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Tribal resources must now be discussed under current CEQA requirements and official Government-to-Government consultation must be conducted in accordance with Assembly Bill 52.

New Information: An updated Cultural Resources Report was completed as part of the 2019 SEIS, and its findings are summarized under Topic V. Cultural Resources.

Analysis Required:

a) **Potentially Significant.** The 2019 SEIS contains new information regarding tribal cultural resources and new requirement for tribal consultation are required by Assembly Bill 52. The preservation of the Old Kane Springs Road site would not involve any ground disturbing activities that could impact tribal cultural resources; however, the restoration of the Viking Ranch site would involve grading and ground disturbance and therefore would have the potential to encounter buried tribal cultural resources. For these reasons, the County has determined that impacts related to tribal cultural resources should be analyzed in the SEIR.

S. UTILITIES AND SERVICE SYSTEMS

Would the project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The previous environmental review process did not identify Utilities and Service Systems as a resource topic with potentially significant environmental impacts and therefore this topic was not analyzed in the 2008 EIR/EIS.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to utilities and service systems. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: No changed circumstances related to the project would create a new or increased significant impact related to utilities and service systems

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant impact related to utilities and service systems or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis related to utilities and service systems is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **No Impact.** The Quarry expansion, development of Well No. 3 and associated pipeline, preservation of the Old Kane Springs Road Site, and restoration of the Viking Ranch site would not result in the relocation or construction of new or expanded utilities, beyond those water and electrical utilities that are part of the proposed project (i.e., Well No. 3, water pipeline, and electric line). There would be no impact.

b) **Less than Significant.** The proposed project would increase pumping within the within the Ocotillo Wells subbasin from 7.8 AF/yr to approximately 26 AF/yr. The *Update on Groundwater Conditions Memorandum* (Todd Groundwater 2018) notes that pumping within the subbasin is minimal (approximately 256 AF/yr), and the basin is a very low priority basin that is not known to be experiencing groundwater level declines (DWR 2021b). Pumping tests indicate that a production rate of 25 to 50 gpm may be sustainable at proposed Well No. 3. The needed 26 AF/yr is approximately equivalent to 16.1 gpm assuming that the pump is operated continuously. Consequently, the proposed project should have sufficient water supplies to supply the Quarry with groundwater. This impact would be less than significant.

   The restoration program at Viking Ranch would restore the natural aquatic functions within the restoration site and would not require water beyond temporary water use during site preparation, primarily water used for dust control. The preservation of the Old Kane Springs Road site would maintain natural aquatic functions and would not require the use of water. There would be no impact related to water supplies from the proposed restoration and preservation actions.

c) **No Impact.** The Quarry expansion, development of Well No. 3 and associated pipeline, preservation of the Old Kane Springs Road site, and restoration of the Viking Ranch site would not require wastewater treatment services.

d) **and e). No Impact.** Limited wastes are generated by Quarry operations because mined materials are sent to the Plant for processing and distribution and all materials sent to the Plant are used. Any minded materials not sent to the Plant are used at the Quarry for reclamation activities. Therefore, operational wastes consist of office waste, wooden pallets, rubber from conveyor belts/skirts, and spent hydrocarbons used to maintain mobile equipment. Under the Quarry expansion, the Quarry would continue to be served by permitted Class I, II and/or III solid waste landfills that have sufficient capacity to accommodate the limited wastes generated.

Limited wastes would be generated during construction and operation of Well No. 3 and the associated pipeline and during site preparation activities associated with the restoration of Viking Ranch. During construction of Well No. 3, the solid wastes would primarily consist of drill cuttings from the construction of Well No. 3, and periodic maintenance of these facilities would generate negligible solid wastes. The restoration of Viking Ranch would generate waste in the form of vegetation that is removed from the site and limited removal of stained soils and two oil-filled plastic containers as recommended by the ESA for the restoration site. All wastes generated by Quarry expansion, development and operation of Well No. 3 and the associated pipeline, and the restoration of Viking Ranch would be managed in accordance with applicable federal, state, and local statues and regulations related to solid waste. The preservation of the Old Kane Springs Road site would does not propose activities that would generate wastes. No aspects of the project have been identified that suggest an inability to comply with applicable regulations and statues. There would be no impact related to solid wastes.

T. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☒	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

The 2008 EIR/EIS did not evaluate wildfire impacts because this was not yet identified as a topic that requires evaluation in the Appendix G, Environmental Checklist Form, of the CEQA Guidelines.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, any minor revisions would not create a new or increase a significant impact related to wildfire. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: Wildfire must now be discussed under current CEQA Guidelines.

New Information: No new information of substantial importance is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: No additional analysis of the Quarry expansion and development of Well No. 3 and the associated pipeline is required because the proposed project would not result in a new significant wildfire impact or a substantial increase in the severity of a previously identified significant impact caused by substantial changes proposed in the project, substantial changes with respect to project circumstances, or new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. However, to ensure that potential impacts have been fully evaluated, the following impact analysis regarding potential impacts to wildfire is provided below. The restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are new proposed actions and require analysis, which is also provided below.

a) **Less than Significant.** The Quarry and proposed Well No. 3 and the associated pipeline alignment are located in an undeveloped and unpopulated desert area. The existing rail line and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the Quarry and proposed well. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3. The unpaved dirt access road could be disturbed during the 10-week pipeline construction period, but it is not a critical route for emergency access or emergency personnel or for evacuation, and vehicular access to public desert areas along the road would be maintained at all times. Split Mountain Road, which is the only road to the Quarry, would not be disturbed by the development of the pipeline and vehicular access to the Quarry would be maintained at all times. Therefore, the potential of the Quarry expansion and development of Well No. 3 and the associated pipeline to substantially impair implementation or interfere with emergency response or emergency evacuation plans would be less than significant.

   The Viking Ranch site and Old Kane Springs Road Site are both located in a rural area and accessed from unpaved roads. The implementation of the restoration program and preservation actions at these sites would not alter or block any roadways. There would be no impact to emergency response or evacuation plans.

b) **No Impact.** The project area, preservation site, and restoration site are all located in a sparsely vegetated areas with low risk of wildfire. California Department of Forestry and Fire Protection (CAL FIRE) is required by law to map areas of significant fire hazards based on fuels, terrain, weather, and other relevant factors (Public Resources Code [PRC] 4201-4204 and California Government Code 51175-89). Consistent with this requirement, CAL FIRE maps fire hazards based on zones, referred to as Fire Hazard Severity Zones. CAL FIRE maps three zones: 1) Moderate Fire Hazard Severity Zones; 2) High Fire Hazard Severity Zones; and 3) Very High Fire Hazard Severity Zones. Neither the project area, preservation site, or restoration site are located in an area designated as a Moderate, High, or Very High Fire Hazard Severity Zone (CAL FIRE 2021).

During mining the Quarry vegetation would be removed, and after mining, Quarry slopes would be revegetated with native vegetation with similar fuel loads as existing vegetation. Therefore, the Quarry expansion would not make changes to the project site that would substantially exacerbate wildfire risk. Well No. 3 and the associated pipeline would be located primarily underground along a corridor with relatively flat topography, and therefore would also not exacerbate wildfire risk. For these reasons, the Quarry expansion and development of Well No. 3 and the associated pipeline would not exacerbate wildfire risk and thereby expose people in the area to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

The restoration site would remove non-native vegetation. The topography of the site is relatively flat, and the proposed restoration would flatten existing berms. The wind rose in San Diego County are typically in the west to east direction. The non-native vegetation would be replaced by native vegetation similar to the existing native vegetation in the surrounding Coyote Creek wash and therefore would not substantially increase the risk of wildfire in the vicinity. Therefore, the restoration of Viking Ranch would not exacerbate wildfire risk and thereby expose people in the area to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

The preservation of the Old Kane Springs Road site would maintain existing conditions on the site and therefore would not have the potential to exacerbate wildfire risk and thereby expose people in the area to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c) **No Impact.** The Quarry expansion would not require the installation or maintenance of any infrastructure beyond the proposed Well No. 3 and pipeline. The existing dirt road used to access the well is already associated with the existing narrow-gauge railroad. The preservation of the Old Kane Springs Road site and restoration of the Viking Ranch site do not require the installation and maintenance of any infrastructure beyond gates that would be installed at Old Kane Springs Road. The fire risk in both the project area and preservation and restoration sites is low due to sparse vegetation. There would be no impact.

d) **Less than Significant.** The proposed project would not increase the number of employees working at the Quarry and restoration of Viking Ranch would not bring people to the restoration site beyond the temporary presence of workers involved in site preparation and monitoring surveys. The long-term management of the preservation and restoration sites would require only occasional visits by a land manager. In addition, the project area and preservation and restoration sites are sparsely vegetated and have a low risk of wildfire. Therefore, the potential of the Quarry expansion, development of Well No. 3 and associated pipeline, preservation of the Old Kane Springs Road site, and restoration of the Viking Ranch site to expose people or structures to significant risks of runoff, slope instability, or drainage changes as a result of wildfire would be less than significant.

Note: *Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. County of Mendocino,(1988) 202 Cal.App.3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal.App.3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656. Revised 2009- CEQA, Revised 2011- ICPDS, Revised 2016 – ICPDS, Revised 2017 – ICPDS, Revised 2019 – ICPDS*

IV. MANDATORY FINDINGS OF SIGNIFICANCE

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, eliminate tribal cultural resources or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☒	☐	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

Discussion

2008 EIR/EIS IMPACT ANALYSIS

As discussed throughout this initial study, potentially significant impacts related to the proposed Well No. 3 and associated pipeline were identified in the 2008 EIR/EIS with respect to biological resources, cultural resources, and tribal cultural resources. Mitigation measures designed to minimize environmental effects to these topics are included throughout this document. Implementation of the mitigation ensured those potentially significant impacts remained below a level of significance.

PROPOSED PROJECT IMPACT ANALYSIS

Project Revisions: The proposed Quarry expansion, and the proposed Well No. 3 and associated pipeline, are substantially in the same location and same configuration as the features that were evaluated in the 2008 EIR/EIS. Therefore, project revisions would not have the potential to create a new or increased significant impact to items a, b, and c. However, the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site are proposed in response to mitigation required by the 2019 SEIS, and these are new actions under the proposed project.

Changed Circumstances: None of the changed circumstances, identified in previous discussions, related to the proposed project could create a new or increased significant impact to items a, b, and c.

New Information: New information of substantial importance related to biological resources, cultural resources, tribal cultural resources, and hydrology and water quality is available that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted.

Analysis Required: Additional analysis is required because the proposed project could result in a new significant impact or a substantial increase in the severity of a previously identified significant impact caused by a project revision and caused by new information of substantial importance that was not known and could not have been known with the exercise of reasonable diligence at the time the 2008 EIR/EIS was adopted. Regarding items (a) through (c), the impacts of the project on biological resources and human beings and the cumulative impacts of the proposed project will be evaluated in the SEIR.

V. PERSONS AND ORGANIZATIONS CONSULTED

This section identifies those persons who prepared or contributed to preparation of this document. This section is prepared in accordance with Section 15129 of the CEQA Guidelines.

A. COUNTY OF IMPERIAL

- Jim Minnick, Director of Planning & Development Services
- Michael Abraham, AICP, Assistant Director of Planning & Development Services
- Jim Minnick, Planning Division Manager
- Patricia Valenzuela, Project Planner
- Imperial County Air Pollution Control District
- Department of Public Works
- Fire Department
- Ag Commissioner
- Environmental Health Services
- Sheriff's Office

B. OTHER AGENCIES/ORGANIZATIONS

- County of San Diego

(Written or oral comments received on the checklist prior to circulation)

VII. REFERENCES

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APPENDIX A-2:
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Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: USG Plaster City Quarry Expansion and Well No. 3 Project

Lead Agency: Imperial County Planning and Development Services Department
Contact Person: Patricia Valenzuela, Planner IV
Mailing Address: 801 Main Street
Phone: 442-265-1749
City: El Centro
Zip: 92243
County: Imperial

Project Location: County: Imperial/San Diego
City/Nearest Community: Ocotillo Wells/Borrego Springs
Cross Streets: Multiple Locations - See Attachment A for detailed project location information
Zip Code:
Longitude/Latitude (degrees, minutes and seconds): ° ′ ″ N / ° ′ ″ W Total Acres:
Assessor's Parcel No.:
Section: Twp.: Range: Base:
Within 2 Miles: State Hwy #: None
Waterways: Fish Creek Wash/Coyote Creek Wash
Airports: None
Railways: Private USG narrow-gauge railroad
Schools: None

Document Type:

CEQA:
☒ NOP
☐ Early Cons
☐ Neg Dec
☐ Mit Neg Dec
☐ Draft EIR
☐ Supplement/Subsequent EIR
(Prior SCH No.)
Other:

NEPA:
☐ NOI
☐ EA
☐ Draft EIS
☐ FONSI

Other:
☐ Joint Document
☐ Final Document
☐ Other:

Local Action Type:

☐ General Plan Update
☐ General Plan Amendment
☐ General Plan Element
☐ Community Plan
☐ Specific Plan
☐ Master Plan
☐ Planned Unit Development
☐ Site Plan
☐ Rezone
☐ Prezone
☒ Use Permit
☐ Land Division (Subdivision, etc.)
☐ Annexation
☐ Redevelopment
☐ Coastal Permit
☒ Other: Major Grading Permit

Development Type:

☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees
☐ Commercial:Sq.ft. Acres Employees
☐ Industrial: Sq.ft. Acres Employees
☐ Educational:
☐ Recreational:
☒ Water Facilities:Type Well, 3.5-mile water line MGD 26 AF/year
☐ Transportation: Type
☒ Mining: Mineral Gypsum
☐ Power: Type MW
☐ Waste Treatment:Type MGD
☐ Hazardous Waste:Type
☒ Other: Restoration

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☐ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☐ Geologic/Seismic
☒ Minerals
☒ Noise
☐ Population/Housing Balance
☐ Public Services/Facilities
☐ Recreation/Parks
☐ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☐ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☐ Wetland/Riparian
☐ Growth Inducement
☐ Land Use
☒ Cumulative Effects
☐ Other:

Present Land Use/Zoning/General Plan Designation:

See Attachment A for zoning information

Project Description: *(please use a separate page if necessary)*

See Attachment B for project description information

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

____ Air Resources Board
____ Boating & Waterways, Department of
____ California Emergency Management Agency
____ California Highway Patrol
____ Caltrans District # ____
____ Caltrans Division of Aeronautics
____ Caltrans Planning
____ Central Valley Flood Protection Board
____ Coachella Valley Mtns. Conservancy
____ Coastal Commission
x Colorado River Board
x Conservation, Department of
____ Corrections, Department of
____ Delta Protection Commission
____ Education, Department of
____ Energy Commission
x Fish & Game Region # 6
____ Food & Agriculture, Department of
____ Forestry and Fire Protection, Department of
____ General Services, Department of
____ Health Services, Department of
____ Housing & Community Development
x Native American Heritage Commission
x Office of Historic Preservation
____ Office of Public School Construction
x Parks & Recreation, Department of
____ Pesticide Regulation, Department of
____ Public Utilities Commission
x Regional WQCB # 7
____ Resources Agency
____ Resources Recycling and Recovery, Department of
____ S.F. Bay Conservation & Development Comm.
____ San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____ San Joaquin River Conservancy
____ Santa Monica Mtns. Conservancy
____ State Lands Commission
____ SWRCB: Clean Water Grants
____ SWRCB: Water Quality
____ SWRCB: Water Rights
____ Tahoe Regional Planning Agency
____ Toxic Substances Control, Department of
x Water Resources, Department of

____ Other: ____
____ Other: ____

Local Public Review Period (to be filled in by lead agency)

Starting Date 07/18/2022
Ending Date 08/22/2022

Lead Agency (Complete if applicable):

Consulting Firm: Benchmark Resources
Address: 2515 East Bidwell Street
City/State/Zip: Folsom, CA 95630
Contact: Bruce Steubing
Phone: 916-983-3379

Applicant: United States Gypsum
Address: 3810 West Evan Hewes Highway
City/State/Zip: Imperial, CA 92251
Phone:

Signature of Lead Agency Representative: **Date:** 06/30/2022

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

ATTACHMENT A
Project Zoning and Location

Project Zoning: The Quarry parcels (including the expansion area) are zoned either S-2 (Open Space/Preservation) or BLM.

The Well No. 3 parcel is zoned S-2 (Open Space/Preservation).

The pipeline alignment parcels are generally zoned S-2 (Open Space/Preservation) with one parcel zoned STATE (APN 033-010-016).

The Viking Ranch restoration site and Old Kane Spring Road preservation site parcels are zoned General Rural (S92) in San Diego County.

Project Location: The United States Gypsum (USG) Plaster City Quarry (included the expansion area) is located in Imperial County on USG-owned property (2,032 acres) and on active unpatented mill site claims on BLM-administered public lands (73 acres) (Assessor Parcel Numbers [APNs] 033-060-09; 033-070-01, -04, -05, -08, -10, -11, -17, and -23; 033-080-05; 033-090-11, -12, -13, -14, and -15). It is located within portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 09 East of the San Bernardino Meridian (SBM).

The proposed USG Quarry Well No. 3 is located in Imperial County on USG-owned property APN 033-020-009. It is located within Section 16 of Township 13 South, Range 09 East SBM.

The proposed pipeline alignment is located in Imperial County within USG-owned property (APNs 033-020-009; 033-060-010 and -008); land owned by the U.S. Bureau of Land Management (BLM) (APNs 033-010-025 and -017; and 033-060-012); and within Anza-Borrego Desert State Park (APN 033-010-016). The pipeline crosses Sections 16, 17, 18, and 19 of Township 13 South, Range 09 East SBM.

The Viking Ranch restoration site is located in San Diego County and consists of approximately 150 acres of Borrego Water District-owned property (APNs 140-030-09-00 and -11-00); approximately 10 acres of privately owned property (APN 140-030-10-00); and approximately 47 acres of lands adjacent to these parcels that would be restored or enhanced. The adjacent lands consist of approximately 13 acres of land owned by the Anza-Borrego Foundation (APN 140-030-05-00), approximately 3 acres of State Park owned land to the north of the restoration site and approximately 31 acres of State Park owned lands to the east of the restoration site (APN 140-030-07-00). The restoration site is located in the southeast corner of Section 4 of Township 10 South, Range 06 East SBM.

The approximately 121-acre Old Kane Springs Road preservation site is located in San Diego County on privately-owned property (APN 253-150-34-00). The mitigation site is located in Section 18 of Township 12 South, Range 08 East SBM.

ATTACHMENT B
Project Description

Environmental Setting: The project area, Viking Ranch restoration site, and Old Kane Springs Road preservation site are located within the Colorado Desert, marked by land with relatively low elevations, some areas even below sea-level. This area is characterized by a series of low-lying mountain ranges opening to the Salton Sea and Imperial Valley. The Quarry and project alignment are located in an undeveloped area at the northwest end of the Fish Creek Mountains, east of Split Mountain (part of the Vallecito Mountains) and along the southeast segment of the Fish Creek Wash. A portion of the northwest segment of the proposed pipeline alignment would cross Anza-Borrego Desert State Park.

The Quarry facilities, narrow-gauge railroad, and adjacent unpaved dirt access road are the only structures or infrastructure in the vicinity of the proposed project. The nearest residences are rural residences located approximately 2.5 miles north of the pipeline alignment at the nearest location, and approximately 3.7 miles northwest of Well No. 3.

The Viking Ranch parcel were primarily former agricultural land located within the Coyote Creek Wash. However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The Viking Ranch restoration site is bordered to the west, north, and east by the Anza-Borrego Desert State Park and to the south by privately-owned orchards. It is located at the base of Coyote Mountain, which is part of the Santa Rosa Mountains range. The nearest sensitive receptor is a rural residence located approximately 900 feet west of the southwest corner of the restoration site.

The Old Kane Springs Road preservation site is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. It contains Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. It is surrounded by undeveloped desert lands, some of which are privately owned, but the predominate ownership in the area is Anza-Borrego Desert State Park.

Project Summary: The proposed project consists of approval of a Conditional Use Permit from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. Together, these three project components are referred to as the "project area".

The development of Well No. 3, the associated pipeline, and the long-term operation and reclamation of the Quarry were part of United States Gypsum Company Expansion/Modernization Project (USG Expansion/Modernization Project). A Draft EIR/EIS was completed for the project in April 2006. On March 18, 2008, a Final EIR/EIS was certified by the Imperial County Board of Supervisors (Board) pursuant to the requirements of CEQA (SCH 200121133). As such, the potential environmental impacts of proposed Quarry expansion and reclamation and development of Quarry Well No. 3 were previously evaluated in the 2008 EIR/EIS. Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this Initial Study will evaluate potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

This Initial Study will also evaluate potential environmental impacts associated with the Viking Ranch site restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Dudek 2022). USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of water of the United States at the Quarry. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this Initial Study will evaluate the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible agencies.

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APPENDIX A-3:
NOP AND SCOPING MEETING COMMENTS

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STATE OF CALIFORNIA Gavin Newsom, *Governor*

NATIVE AMERICAN HERITAGE COMMISSION

Governor's Office of Planning & Research

Jul 15 2022

STATE CLEARINGHOUSE

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Luiseño

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NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

July 15, 2022

Patricia Valenzuela, Planner IV
Imperial County Planning and Development Services Department
801 Main Street
El Centro, CA 92243

Re: 2001121133, USG Plaster City Quarry Expansion and Well No. 3 Project, Imperial County

Dear Ms. Valenzuela:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015. If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). Both SB 18 and AB 52 have tribal consultation requirements. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

- **a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
- **b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- **a.** Avoidance and preservation of the resources in place, including, but not limited to:
  - **i.** Planning and construction to avoid the resources and protect the cultural and natural context.
  - **ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- **b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - **i.** Protecting the cultural character and integrity of the resource.
  - **ii.** Protecting the traditional use of the resource.
  - **iii.** Protecting the confidentiality of the resource.
- **c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- **d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
- **e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
- **f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

- **a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
- **b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
- **c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe. (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    - **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    - **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (https://ohp.parks.ca.gov/?page_id=30331) for an archaeological records search. The records search will determine:
    - **a.** If part or all of the APE has been previously surveyed for cultural resources.
    - **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
    - **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
    - **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

  a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

  b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

  a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

  b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

  c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

cc: State Clearinghouse

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

Governor's Office of Planning & Research
Aug 18 2022
STATE CLEARINGHOUSE

August 18, 2022
Sent via email

Patricia Valenzuela
Planner IV
Imperial County Planning and Development Services Department
801 Main Street
El Centro, CA 92243

Notice of Preparation of a Draft Environmental Impact Report
USG Plaster City Quarry Expansion and Well No. 3 Project, Imperial County
State Clearinghouse No. 2001121133

Dear Ms. Valenzuela:

The California Department of Fish and Wildlife (CDFW) received a Notice of Preparation (NOP) of a Supplemental Environmental Impact Report (SEIR) from the Imperial County Planning and Development Services Department (County) for the USG Plaster City Quarry Expansion and Well No. 3 Project, (Project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's Trustee Agency for fish and wildlife resources, and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

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[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CDFW is also submitting comments as a Responsible Agency under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the Project proponent may seek related take authorization as provided by the Fish and Game Code.

PROJECT LOCATION

The USG Plaster City Quarry (Quarry) holdings consist of 2,048 acres and are located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor's Parcel Number [APN] 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-030-05-00, -07-00, -09-00, -10-00, and -11-00). The approximately 121-acre Old Kane Springs Road preservation site is located in San Diego County approximately 10 miles northwest of the USG Quarry (APN 253-150-34-00).

PROJECT DESCRIPTION SUMMARY

Specific details of the proposed Project include:

1. USG Plaster City Quarry Expansion and Well No. 3 Project for the following:
    - Approval of a Conditional Use Permit from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry.
    - Evaluation of potential environmental impacts associated with the restoration of the Viking Ranch site and preservation of the Old Kane Springs Road site.

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources.

CDFW recommends that the forthcoming SEIR address the following:

Assessment of Biological Resources

Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts and that special emphasis should be placed on environmental resources that are rare or unique to the region. To enable CDFW staff to adequately review and comment on the project, the SEIR should include a complete assessment of the flora and fauna within and adjacent to the Project footprint, with particular emphasis on identifying rare, threatened, endangered, and other sensitive species and their associated habitats.

CDFW recommends that the SEIR specifically include:

1. An assessment of the various habitat types located within the project footprint, and a map that identifies the location of each habitat type. CDFW recommends that floristic, alliance- and/or association-based mapping and assessment be completed following *The Manual of California Vegetation*, second edition (Sawyer et al. 2009[2]). Adjoining habitat areas should also be included in this assessment where site activities could lead to direct or indirect impacts offsite. Habitat mapping at the alliance level will help establish baseline vegetation conditions.

2. A general biological inventory of the fish, amphibian, reptile, bird, and mammal species that are present or have the potential to be present within each habitat type onsite and within adjacent areas that could be affected by the project. CDFW's California Natural Diversity Database (CNDDB) in Sacramento should be contacted at (916) 322-2493 or CNDDB@wildlife.ca.gov or https://wildlife.ca.gov/Data/CNDDB/Maps-and-Data to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code, in the vicinity of the proposed Project.

   CDFW's CNDDB is not exhaustive in terms of the data it houses, nor is it an absence database. CDFW recommends that it be used as a starting point in gathering information about the *potential presence* of species within the general area of the project site.

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[2] Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California Vegetation, 2nd ed. California Native Plant Society Press, Sacramento, California. http://vegetation.cnps.org/

3. A complete, *recent* inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish & G. Code, § 3511). Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.

4. Burrowing Owl (*Athene cunicularia*)

   The Project site has the potential to provide suitable foraging and/or nesting habitat for burrowing owl. Take of individual burrowing owls and their nests is defined by Fish and Game Code section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in Fish and Game Code section 86 as “hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill.”

   CDFW recommends that the County follow the recommendations and guidelines provided in the *Staff Report on Burrowing Owl Mitigation* (Department of Fish and Game, March 2012); available for download from CDFW’s website: https://www.wildlife.ca.gov/conservation/survey-protocols. The Staff Report on Burrowing Owl Mitigation, specifies three steps for project impact evaluations:

      a. A habitat assessment;
      b. Surveys; and
      c. An impact assessment

   As stated in the Staff Report on Burrowing Owl Mitigation, the three progressive steps are effective in evaluating whether a project will result in impacts to burrowing owls, and the information gained from the steps will inform any subsequent avoidance, minimization, and mitigation measures. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with Fish and Game Code sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project.

Within the 2012 Staff Report, the minimum habitat replacement recommendation was purposely excluded as it was shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area. It hypothesized that mitigation for permanent impacts to nesting, occupied, and satellite burrows and burrowing owl habitat should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present. If mitigation occurs offsite, it should include (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) be sufficiently large acreage with the presence of fossorial mammals. Futhermore, the report noted that suitable mitigation lands should be based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide.

5. A thorough, recent, floristic-based assessment of special status plants and natural communities, following CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (CDFW 2018[3]).
6. Information on the regional setting that is critical to an assessment of environmental impacts, with special emphasis on resources that are rare or unique to the region (CEQA Guidelines § 15125[c]).
7. A full accounting of all open space and mitigation/conservation lands within and adjacent to the Project.

Analysis of Direct, Indirect, and Cumulative Impacts to Biological Resources

The SEIR should provide a thorough discussion of the direct, indirect, and cumulative impacts expected to adversely affect biological resources as a result of the Project. To

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[3] CDFW, 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities, State of California, California Natural Resources Agency, Department of Fish and Wildlife: March 20, 2018 (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline)

ensure that Project impacts to biological resources are fully analyzed, the following information should be included in the SEIR:

1. A discussion of potential impacts from lighting, noise, human activity (e.g., recreation), defensible space, and wildlife-human interactions created by zoning of development projects or other project activities adjacent to natural areas, exotic and/or invasive species, and drainage. The latter subject should address Project-related changes on drainage patterns and water quality within, upstream, and downstream of the Project site, including: volume, velocity, and frequency of existing and post-Project surface flows; polluted runoff; soil erosion and/or sedimentation in streams and water bodies; and post-Project fate of runoff from the Project site.

2. A discussion of potential indirect Project impacts on biological resources, including resources in areas adjacent to the project footprint, such as nearby public lands (e.g., National Forests, State Parks, etc.), open space, adjacent natural habitats, riparian ecosystems, wildlife corridors, and any designated and/or proposed reserve or mitigation lands (e.g., preserved lands associated with a Natural Community Conservation Plan, or other conserved lands).

3. An evaluation of impacts to on-site and adjacent open space lands from both the construction of the Project and any long-term operational and maintenance needs. The proposed Project has the potential to impacts lands managed by Anza-Borrego Desert State Park. CDFW encourages the County to contact California State Parks to determine if any portion of the project will impact adjacent conserved lands, and work collaboratively to avoid and minimize impacts.

4. A cumulative effects analysis developed as described under CEQA Guidelines section 15130 Please include all potential direct and indirect Project related impacts to riparian areas, wetlands, vernal pools, alluvial fan habitats, wildlife corridors or wildlife movement areas, aquatic habitats, sensitive species and other sensitive habitats, open lands, open space, and adjacent natural habitats in the cumulative effects analysis. General and specific plans, as well as past, present, and anticipated future projects, should be analyzed relative to their impacts on similar plant communities and wildlife habitats.

Alternatives Analysis

CDFW recommends the SEIR describe and analyze a range of reasonable alternatives to the Project that are potentially feasible, would “feasibly attain most of the basic objectives of the Project,” and would avoid or substantially lessen any of the Project’s significant effects (CEQA Guidelines § 15126.6[a]). The alternatives analysis should also evaluate a “no project” alternative (CEQA Guidelines § 15126.6[e]).

Mitigation Measures for Project Impacts to Biological Resources

The SEIR should identify mitigation measures and alternatives that are appropriate and adequate to avoid or minimize potential impacts, to the extent feasible. The County should assess all direct, indirect, and cumulative impacts that are expected to occur as a result of the implementation of the Project and its long-term operation and maintenance. When proposing measures to avoid, minimize, or mitigate impacts, CDFW recommends consideration of the following:

1. *Fully Protected Species*: Fully protected species may not be taken or possessed at any time. Project activities described in the SEIR should be designed to completely avoid any fully protected species that have the potential to be present within or adjacent to the Project area. CDFW also recommends that the SEIR fully analyze potential adverse impacts to fully protected species due to habitat modification, loss of foraging habitat, and/or interruption of migratory and breeding behaviors. CDFW recommends that the Lead Agency include in the analysis how appropriate avoidance, minimization, and mitigation measures will reduce indirect impacts to fully protected species.

2. *Sensitive Plant Communities*: CDFW considers sensitive plant communities to be imperiled habitats having both local and regional significance. Plant communities, alliances, and associations with a statewide ranking of S-1, S-2, S-3, and S-4 should be considered sensitive and declining at the local and regional level. These ranks can be obtained by querying the CNDDB and are included in *The Manual of California Vegetation* (Sawyer et al. 2009). The SEIR should include measures to fully avoid and otherwise protect sensitive plant communities from project-related direct and indirect impacts.

3. *California Species of Special Concern* (CSSC): CSSC status applies to animals generally not listed under the federal Endangered Species Act or the CESA, but which nonetheless are declining at a rate that could result in listing, or historically occurred in low numbers and known threats to their persistence currently exist. CSSCs should be considered during the environmental review process. CSSC that have the potential or have been documented to occur within or adjacent to the project area, including, but not limited to: burrowing owl (*Athene cunicularia*), flat-tailed horned lizard (*Phrynosoma mcallii*), loggerhead shrike (*Lanius ludovicianus*), northern harrier (*Circus hudsonius*), and yellow warbler (*Setophaga petechia*).

4. *Mitigation*: CDFW considers adverse project-related impacts to sensitive species and habitats to be significant to both local and regional ecosystems, and the SEIR should include mitigation measures for adverse project-related impacts to these resources. Mitigation measures should emphasize avoidance and reduction of project impacts. For unavoidable impacts, onsite habitat restoration and/or enhancement, and preservation should be evaluated and discussed in detail. Where habitat preservation is not available onsite, offsite land acquisition, management, and preservation should be evaluated and discussed in detail.

The SEIR should include measures to perpetually protect the targeted habitat values within mitigation areas from direct and indirect adverse impacts in order to meet mitigation objectives to offset project-induced qualitative and quantitative losses of biological values. Specific issues that should be addressed include restrictions on access, proposed land dedications, long-term monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

If sensitive species and/or their habitat may be impacted from the Project, CDFW recommends the inclusion of specific mitigation in the SEIR. CEQA Guidelines section 15126.4, subdivision (a)(1)(8) states that formulation of feasible mitigation measures should not be deferred until some future date. The Court of Appeal in *San Joaquin Raptor Rescue Center* v. *County* of *Merced* (2007) 149 Cal.App.4th 645 struck down mitigation measures which required formulating management plans developed in consultation with State and Federal wildlife agencies after Project approval. Courts have also repeatedly not supported conclusions that impacts are mitigable when essential studies, and therefore impact assessments, are incomplete *(Sundstrom* v. *County* of *Mendocino* (1988) 202 Cal. App. 3d. 296; *Gentry* v. *City* of *Murrieta (1995)* 36 Cal. App. 4th 1359; *Endangered Habitat League, Inc.* v. *County* of *Orange* (2005) 131 Cal. App. 4th 777).

CDFW recommends that the SEIR specify mitigation that is roughly proportional to the level of impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). The mitigation should provide long-term conservation value for the suite of species and habitat being impacted by the Project. Furthermore, in order for mitigation measures to be effective, they need to be specific, enforceable, and feasible actions that will improve environmental conditions.

5. *Habitat Revegetation/Restoration Plans*: Plans for restoration and revegetation should be prepared by persons with expertise in southern California ecosystems and native plant restoration techniques. Plans should identify the assumptions used to develop the proposed restoration strategy. Each plan should include, at a minimum: (a) the location of restoration sites and assessment of appropriate reference sites; (b) the plant species to be used, sources of local propagules, container sizes, and seeding rates; (c) a schematic depicting the mitigation area; (d) a local seed and cuttings and planting schedule; (e) a description of the irrigation methodology; (f) measures to control exotic vegetation on site; (g) specific success criteria; (h) a detailed monitoring program; (i) contingency measures should the success criteria not be met; and (j) identification of the party responsible for meeting the success criteria and providing for conservation of the mitigation site in perpetuity. Monitoring of restoration areas should extend across a sufficient time frame to ensure that the new habitat is established, self-sustaining, and capable of surviving drought.

   CDFW recommends that local onsite propagules from the Project area and nearby vicinity be collected and used for restoration purposes. Onsite seed collection should be initiated in advance of project impacts in order to accumulate sufficient propagule material for subsequent use in future years. Onsite vegetation mapping at the alliance and/or association level should be used to develop appropriate restoration goals and local plant palettes. Reference areas should be identified to help guide restoration efforts. Specific restoration plans should be developed for various project components as appropriate.

Restoration objectives should include protecting special habitat elements or re-creating them in areas affected by the Project; examples could include retention of woody material, logs, snags, rocks, and brush piles.

6. *Nesting Birds and Migratory Bird Treaty Act:* Please note that it is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Fish and Game Code sections 3503, 3503.5, and 3513 afford protective measures as follows: Fish and Game Code section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by Fish and Game Code or any regulation adopted pursuant thereto. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

   CDFW recommends that the SEIR include the results of avian surveys, as well as specific avoidance and minimization measures to ensure that impacts to nesting birds do not occur. Project-specific avoidance and minimization measures may include, but not be limited to: project phasing and timing, monitoring of project-related noise (where applicable), sound walls, and buffers, where appropriate. The SEIR should also include specific avoidance and minimization measures that will be implemented should a nest be located within the project site. If pre-construction surveys are proposed in the SEIR, the CDFW recommends that they be required no more than three (3) days prior to vegetation clearing or ground disturbance activities, as instances of nesting could be missed if surveys are conducted sooner.

7. *Moving out of Harm's Way:* To avoid direct mortality, CDFW recommends that the lead agency condition the SEIR to require that a CDFW-approved qualified biologist be retained to be onsite prior to and during all ground- and habitat-disturbing activities to move out of harm's way special status species or other wildlife of low or limited mobility that would otherwise be injured or killed from project-related activities. Movement of wildlife out of harm's way should be limited to only those individuals that would otherwise by injured or killed, and individuals should be moved only as far a necessary to ensure their safety (i.e., CDFW does not recommend relocation to other areas). Furthermore, it should be noted that the temporary relocation of onsite wildlife

does not constitute effective mitigation for the purposes of offsetting project impacts associated with habitat loss.

8. *Translocation of Species*: CDFW generally does not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species as studies have shown that these efforts are experimental in nature and largely unsuccessful.

California Endangered Species Act

CDFW is responsible for ensuring appropriate conservation of fish and wildlife resources including threatened, endangered, and/or candidate plant and animal species, pursuant to CESA. CDFW recommends that a CESA Incidental Take Permit (ITP) be obtained if the Project has the potential to result in “take” (California Fish and Game Code Section 86 defines “take” as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill”) of State-listed CESA species, either through construction or over the life of the project. It is the policy of CESA to conserve, protect, enhance, and restore State-listed CESA species and their habitats.

CDFW encourages early consultation, as significant modification to the proposed Project and avoidance, minimization, and mitigation measures may be necessary to obtain a CESA ITP. CDFW must comply with CEQA for issuance of a CESA ITP. CDFW therefore recommends that the SEIR addresses all Project impacts to listed species and specify a mitigation monitoring andreporting program that will meet the requirements of CESA.

Lake and Streambed Alteration Program

Based on review of material submitted with the NOP and review of aerial photography, stream resources traverse the site. Depending on how the Project is designed and constructed, it is likely that the Project applicant will need to notify CDFW per Fish and Game Code section 1602. Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following: substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or deposit debris, waste or other materials that could pass into any river, stream, or lake. Please note that "any river, stream or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams, desert washes, andwatercourses with a subsurface flow.

Upon receipt of a complete notification, CDFW determines if the proposed Project activities may substantially adversely affect existing fish and wildlife resources and whether a Lake and Streambed Alteration (LSA) Agreement is required. An LSA Agreement includes measures necessary to protect existing fish and wildlife resources.

CDFW may suggest ways to modify your Project that would eliminate or reduce harmful impacts to fish and wildlife resources.

CDFW's issuance of an LSA Agreement is a "project" subject to CEQA (see Pub. Resources Code § 21065). To facilitate issuance of an LSA Agreement, if necessary, the SEIR should fully identify the potential impacts to the lake, stream, or riparian resources, and provide adequate avoidance, mitigation, and monitoring and reporting commitments. Early consultation with CDFW is recommended, since modification of the proposed Project may be required to avoid or reduce impacts to fish and wildlife resources. To submit a Lake or Streambed Alteration notification, please go to https://wildlife.ca.gov/Conservation/Environmental-Review/EPIMS .

ADDITIONAL COMMENTS AND RECOMMENDATIONS

To ameliorate the water demands of this Project, CDFW recommends incorporation of water-wise concepts in project landscape design plans. In particular, CDFW recommends xeriscaping with locally native California species, and installing water-efficient and targeted irrigation systems (such as drip irrigation). Native plants support butterflies, birds, reptiles, amphibians, small mammals, bees, and other pollinators that evolved with those plants, more information on native plants suitable for the Project location and nearby nurseries is available at CALSCAPE: https://calscape.org/. Local water agencies/districts and resource conservation districts in your area may be able to provide information on plant nurseries that carry locally native species, and some facilities display drought-tolerant locally native species demonstration gardens (for example the Riverside-Corona Resource Conservation District in Riverside). Information on drought-tolerant landscaping and water-efficient irrigation systems is available on California's Save our Water website: https://saveourwater.com/ .

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). Information can be submitted online or via completion of the CNDDB field survey form at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data . The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

ENVIRONMENTAL DOCUMENT FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.).

CONCLUSION

CDFW appreciates the opportunity to comment on the NOP of a SEIR for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH No. 2001121133) and recommends that the County address CDFW's comments and concerns in the forthcoming SEIR. Questions regarding this letter or further coordination should be directed to Jacob Skaggs, Environmental Scientist, at jacob.skaggs@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Kim Freeburn
84F92FFEEFD24C8...

Kim Freeburn
Acting Environmental Program Manager

ec:

Heather Brashear, Senior Environmental Scientist (Supervisor), CDFW
Heather.Brashear@Wildlife.ca.gov

Office of Planning and Research, State Clearinghouse, Sacramento
state.clearinghouse@opr.ca.gov

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August 22, 2022

Mr. Jim Minnick
Director
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: NOP of a Draft SEIR For USG Plaster City Quarry Expansion and Well No. 3 Project; CUP20-0016

Dear Mr. Minnick:

On July 15, 2022, the Imperial Irrigation District received from the Notice of Preparation of a Draft Supplement Environmental Impact Report for the USG Plaster City Quarry expansion and well no. 3 project. The USG Plaster City Quarry consists of 2,048 acres located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry. The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30-foot-wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the ROW (3.75 acres) is located within the Anza-Borrego Desert State Park.

The IID has reviewed the application and has the following comments:

1. To obtain electrical service for the proposed well pump #3, the applicant should be advised to contact Gabriel Ramirez, IID Service Planner, at (760) 339-9257 or e-mail Mr. Ramirez at gramirez@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the applicant will be required to submit pump specifications: horse power, operating voltage, pump starter information; AutoCAD site plan, drawings, proposed power line rights of way and access road to operate and maintain proposed underground power line that will serve the well pump, and the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing new electrical service to the project.

2. Electrical capacity is limited in the project area. A circuit study may be required. Any system improvements or mitigation identified in the circuit study to enable the provision of electrical service to the project shall be the financial responsibility of the applicant.

3. The proposed project is subject to IID's Interim Water Supply Policy. In order to obtain a water supply from IID for a non-agricultural project, the project proponent will be required to comply with all applicable IID policies and regulations and is required to enter into a

water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project, including potential impacts to the Salton Sea as a result of reduced drainage flow, be adequately assessed, appropriate mitigation developed if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies.

4. IID has implemented a water supply apportionment program pursuant to IID's revised Equitable Distribution Plan, which the Project is subject to including any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the Project's water as an industrial water user. For more information on how to obtain a water supply agreement, please visit IID's website at https://www.iid.com/water/municipal-industrial-and-commercial-customers or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com.

5. Although the proposed well #3 is not an issue because it is outside of the Lower Colorado River Accounting Surface area, nonetheless, the project is subject to an IID Encroachment Permit for a pump the applicant plans to place on the Westside Main Canal.

6. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

7. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities

8. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Enrique B. Martinez – General Manager
Mike Pacheco – Manager, Water Dept.
Jamie Asbury – Manager, Energy Dept.
Constance Bergmark – Deputy Mgr. Energy Dept., Energy Business, Regulatory & Transactions Admin.
Geoffrey Holbrook – Interim General Counsel
Michael P. Kemp – Superintendent, Regulatory & Environmental Compliance
Laura Cervantes. – Supervisor, Real Estate
Jessica Humes – Environmental Project Mgr. Sr., Water Dept.

APPENDIX B:
APPLICATION MATERIALS

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APPENDIX B-1:
IMPERIAL COUNTY
CONDITIONAL USE PERMIT #08-0003

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Recorded in Official Records,
Imperial County
Doc#: 2008-018433
7/02/2008 11:27 AM

When Recorded Return to:

Imperial County Planning & Development
Services Department
801 Main Street
El Centro California 92243

CONDITIONAL USE PERMIT CUP#08-0003
(U.S. Gypsum water well for Quarry expansion project)
(Assessors Parcel Number 033-020-009-000)
Approved by Board of Supervisors on March 18, 2008

This Agreement is made and entered into on June 18th 2008, by and between the U.S. Gypsum hereinafter referred to as "Permittee", and the COUNTY OF IMPERIAL, a political subdivision of the State of California, hereinafter referred to as "COUNTY".

WHEREAS, Permittee is the owner, lessee or successor in interest in certain land in Imperial County identified as N2 OF SW4 of NW4 OF SE4 & SW4 OF NW4 TR 49 T13 R9 also known as Assessor's Parcel Number 033-020-009-000 and;

WHEREAS, Permittee has applied to the "County" for permission to construct and operate a water well for the processing and manufacturing of ore from the Quarry mining site

WHEREAS, Permittee will not operate any type of use other than specified herein and;

WHEREAS, County, after a review of the project, after preparation and circulation of the Environmental Impact Report State Clearinghouse No. 2001121133 (SCH), after a noticed public hearing before the Planning

Commission, dated ___________, after a noticed public hearing before the Board of Supervisors, dated ________________, agreed to issue Conditional Use Permit #08-0003, subject to all of the following conditions:

NOW THEREFORE, the County issues CUP #08-0003subject to all of the following conditions.

GENERAL CONDITIONS:

The "GENERAL CONDITIONS" are shown by the letter "G". These conditions are conditions that are either routinely and commonly included in all Conditional Use Permits as "standardized" conditions and/or are conditions that the Imperial County Planning Commission has established as a requirement on all CUP's for consistent application and enforcement. The Permittee is advised that the General Conditions are as applicable as the other types of conditions or mitigation measures within this Conditional Use Permit!

G-1 GENERAL LAW:

The Permittee shall comply with all local, state and/or federal laws, rules, regulations, ordinances, and/or standards as they may pertain to the project whether specified herein or not.

G-2 PERMITS/LICENSES:

The Permittee shall obtain any and all local, state and/or federal permits, licenses, and/or other approvals for the construction and/or operation of the Project. This shall include, but not be limited to, local requirements for Health, Building, Sanitation, Air Pollution Control District (APCD), Public Works, Imperial County Sheriff, Fire/Office of Emergency Services, Regional Water Quality Control Board, among others. Permittee shall likewise comply with all such permit requirements and shall submit a copy of such additional permits and/or licenses to the Planning & Development Services Department within 30 days of receipt, as deemed necessary.

G-3 CONDITION PRIORITY:

This Project shall be constructed and operated as described in the U.S. Gypsum Conditional Use Permit, all environmental mitigation monitoring measures identified in the U.S. Gypsum Mitigation Monitoring and Reporting Program (MMRP), and as specified in these conditions. If there is a difference, or a discrepancy between this CUP, or any other permit or law, the most stringent condition/law shall govern.

G-4 EIR EIS MITIGATION MEASURES

Permittee shall undertake all mitigation measures identified in the U.S. Gypsum Mitigation Monitoring Reporting Program (MMRP) and implement these measures as applicable.

G-5 RECORDATION:

This permit shall **not be effective** until it is recorded at the Imperial County Recorder's Office, and payment of the recordation fee shall be the responsibility of the Permittee. If the Permittee fails to pay the recordation fee within six (6) months from the date of approval, and/or this permit is not recorded within 180 days from the date of approval, this permit-may be deemed null and void, without notice having to be provided to Permittee. Permittee may request a written extension by filing such a request with the Planning & Development Services Director (Director) at least 30 days prior to the original 180-day expiration. The Director may approve an extension for a period not to exceed 180 days. An extension may not be granted if the request for an extension is filed after the expiration date.

G-6 INDEMNIFICATION:

As a condition of this permit, Permittee agrees to defend, indemnify, hold harmless, and release the County, its agents, officers, attorneys, and employees from any claim, action, or proceeding brought against any of them, the purpose of which is to attack, set aside, void, or annul the permit or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorneys fees, or expert witness fees that may be asserted by any person or entity, including the Permittee, arising out of or in connection with the approval of this permit, whether there is concurrent, passive or active negligence on the part of the County, its agents, officers, attorneys, or employees. This indemnification shall include Permittee's actions involved in construction, operation or abandonment of the permitted activities.

G-7 TIME LIMIT:

Unless otherwise specified within the specific conditions, this permit shall be limited to a maximum of twenty years (20) years from the recordation of the CUP. If an extension is necessary, or is requested beyond twenty (20) years, the Permittee shall file a written extension request at least sixty (60) days prior to the expiration of the Permit. Such an extension request shall include the appropriate extension fee, pursuant to the Land Use Ordinance, Title 9, Division 9, Section 90901.03 et. seq., General Planning fees. If the original approval was granted by the Planning Commission and/or the Board of Supervisors, such an extension shall only be considered by the approving body, after a noticed public hearing. Nothing stated or implied within this permit shall constitute a guarantee that an extension will be granted. An extension may not be granted if the project is in violation of any one or all of the conditions or if there is a history of non-compliance with the permit conditions.

G-8 COSTS:

As allowed by and consistent with applicable laws, Permittee shall pay any and all amounts determined by the County Planning and Development Services Department to defray any and all cost(s) for the review of studies/reports, field investigations, and other activities directly related to this Conditional Use Permit, County Ordinance or any other applicable law as provided in the Land Use Ordinance, Section 90901.03 et. seq., General Planning fees. Further, as allowed by and consistent with applicable laws, County Departments, directly involved in the monitoring/enforcement of this project may bill Permittee under this provision; however, said billing shall only be through and with the approval of the Planning and Development Services Department.

G-9 INSPECTION AND RIGHT OF ENTRY:

The County reserves the right to enter the premises to make appropriate inspection(s) and to determine if the condition(s) of this permit are complied with. The owner or operator shall allow authorized County representative(s) access upon the presentation of credentials and other documents as may be required by law to:

(a) Enter at reasonable times upon the owner's or operator's premises where the permitted facilities are located, or where records must be kept under the conditions of the permit;

(b) Have access to and ability to copy, at reasonable times, any records that must be kept under the conditions of the permit;

(c) Inspect at reasonable times any facilities, equipment, or operations regulated or required under the permit.

G-10 NOTICE OF REGULATORY ACTIVITIES:

Permittee shall provide to the Planning and Development Services Department copies of all notices and/or submissions to any State, Federal, or local regulatory authority initiated by Permittee concerning or relating to operations under this permit, concurrently with submission to these authorities.

G-11 REPORTS:

Permittee shall submit to the Planning and Development Services Department, the following reports;

1. An "Annual Compliance Report", which shall be filed with the Planning and Development Services Department and describes Permittee's efforts to comply with the CUP, and all other permits, and shall be in a format acceptable to the Planning and Development Services Director. The Annual Compliance Report shall be submitted no later than May 1st of each year, and shall cover the preceding 12 month period ending December 31 of each year.

2. The County may also request, in writing, "Special Monitoring Reports" containing such documents and information from Permittee, and at such intervals and containing such information as the Planning and Development Services Director, Health Officer or Public Works Director (individually or collectively) deem necessary for monitoring the Site. Special Reports shall be submitted by Permittee no later than the date specified by the written request.

3. Upon prior notice to and consultation with Permittee, County may also require special report(s)/studies to be prepared by an outside consultant retained by the County, and the cost of such report to be paid by Permittee. The Permittee shall be allowed to comment on the scope of work, and shall cooperate with such consultant.

G-12 HEALTH HAZARD:

If the County Health Officer determines that a significant health hazard exists to the public, the Health Officer may require appropriate measures and the Permittee shall implement such measures to mitigate the health hazard. If the hazard to the public is determined to be imminent, such measures may be imposed immediately and may include temporary suspension of permitted activities, the measures imposed by the County Health Officer shall not prohibit the Permittee from requesting a special Planning Commission meeting, provided the Permittee bears all related costs.

G-13 ENFORCEMENT AND TERMINATION:

(a) If the Planning and Development Services Department finds and determines that the Permittee or successor-in-interest has not complied or cannot comply with the terms and conditions of the CUP, or the Planning and Development Services Department determines that the permitted activities constitute a nuisance, the Planning and Development Services Director shall provide Permittee with notice and opportunity to comply with the enforcement or abatement order.

(b) If after receipt of the order (1) Permittee fails to comply, and/or (2) Permittee cannot comply with the conditions set forth in the CUP, then the matter shall be referred to the Planning Commission for permit modification, suspension, or termination, or to the appropriate enforcement authority.

(c) If the Planning Commission determines to proceed with modification, suspension or termination of the CUP, the Planning Commission shall give at least thirty (30) days notice to Permittee, and such other public notice as required by law, of its intention to do so.

The notice shall contain:

1. The time and place of the hearing;
2. A statement as to the reasons why the Planning Commission proposes to modify, suspend, or terminate the CUP;
3. Any proposed modification to the CUP and other information which the Planning Commission considers necessary or desirable to inform Permittee the public of the nature of the hearing.

(d) Any action by the Planning Commission shall be documented by written findings. In the event the Planning Commission seeks to suspend or revoke the CUP, the Commission must specifically find that such revocation is necessary because prior governmental efforts to get Permittee to comply with the terms and conditions of the permit have failed and Permittee has failed to demonstrate to the Planning Commission's satisfaction the willingness or ability to comply with the terms and conditions of the use permit, or to abate a nuisance, or to prevent an immediate threat to the public health or safety.

(e) After the hearing concerning enforcement, modification or termination of the CUP, the Planning Commission shall make its determination within seventy-five (75) days, unless Permittee and the Planning and Development Services Director agree by mutual written consent to extend the time for decision.

G-14 VIOLATIONS OF REPORTING REQUIREMENTS:

Failure by Permittee to timely submit (as determined by the applicable agency) any report pursuant to Condition G-11, or any permit, permit application, or report to another permitting agency shall be a violation of this permit which may be enforced pursuant to Condition G-13 or at the discretion of the Planning Commission. The County may also as a penalty impose a double cost charge for the review of any reports which are not timely submitted.

G-15 NUISANCE PER SE/NUISANCE:

As between the County and the Permittee, any violation of this permit may be a "nuisance per se". The County may enforce the terms and conditions of this permit in accordance with its Codified Ordinances and/or State law. The provisions of this paragraph shall not apply to any claim of nuisance per se brought by a third party.

In addition, Permittee shall not be permitted to maintain a "nuisance", which is anything which: (1) is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, and/or (2) affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal, and/or (3) occurs during or as a result of the handling of any waste fuel. Any nuisance not abated within 48 hours after notice by Imperial County Planning and Development Services Department may also result up to a $5,000 per day fine for each day of violation.

G-16 PERMITS OF OTHER AGENCIES INCORPORATED:

Permits granted by other governmental agencies in connection with the Project are incorporated herein by reference.

G-17 SPECIFICITY:

The issuance of this permit does not authorize the Permittee to construct or operate the project in violation of any state, federal, local law nor beyond the specified boundaries of the project as shown the application/project description/permit, nor shall this permit allow any accessory or ancillary use not specified herein. This permit does not provide any prescriptive right or use to the Permittee for future addition and or modifications to the project.

G-18 INVALID CONDITIONS:

If any section, subsection, sentence, clause, or phrase of the CUP is for any reason held to be invalid, by a Court of proper jurisdiction, the County may consider other similar conditions as it may deem necessary to address the negative impacts which were intended to be mitigated by any single condition which must be changed due to invalidity.

G-19 MINOR AMENDMENTS:

The Planning and Development Services Director may approve minor modifications to the permit to accommodate minor changes or modifications to the design, construction, and/or operation of the project provided said changes are necessary for the project to meet other laws, regulations, codes, or conditions of the CUP and provided further, that such changes will not result in any additional environmental impacts. The term minor shall be as interpreted by the Director.

G-20 CHANGE OF OWNER/OPERATOR:

In the event the ownership of the site or the operation of the site transfers from the current Permittee to a new successor Permittee, the successor Permittee shall be bound by all terms and conditions of this Permit as if said successor was the original Permittee. The current Permittee shall inform the County Planning and Development Services Department in writing at least 60 days prior to any such transfer. In the event of a change, the new Owner/Operator shall file with the Department, via certified mail, a letter stating that they are fully aware of all conditions and acknowledge that they will adhere to all. If this Permit or any subservient or associated permit requires financial surety, the transfer of this Permit shall not be effective until the new Permittee has requisite surety on file. Furthermore, existing surety shall not be released until replacement surety is accepted by Imperial County.

G-21 RESPONSIBLE AGENT:

All operations shall be conducted under the direction of a responsible agent. Permittee shall maintain on file with the Planning and Development Services Department the name and phone number of the responsible agent for the site. This agent shall ensure that appropriate personnel and equipment shall be available to respond to on-site emergencies. A back-up name shall also be provided, and a phone number for 24-hour emergency contact shall also be on file. If there are other users, the same information (as applicable) required from the Permittee shall also be made available to the County from such other users.

G-22 GENERAL WELFARE:

All construction shall be conducted with consistency with all laws, conditions, adopted County Ordinance(s) and the Uniform Codes, as adopted by the County, for Seismic Zone 4, and in compliance with State and Federal regulations. Permits (electric, plumbing, grading, among others) shall be secured for all facilities prior to any construction being commenced. The project must be built so as to be in harmony with the area and not conflict with the public health, safety, comfort, convenience, and general welfare.

G-23 APPROVALS AND CONDITIONS SUBSEQUENT TO GRANTING PERMIT:

A. Permittee acceptance of this permit shall be deemed to constitute agreement with the terms and conditions contained herein. Where a requirement is imposed in this permit that Permittee conduct a monitoring program, and where the County has reserved the right to impose or modify conditions with which the Permittee must comply based on data obtained there from, or where Permittee is required to prepare specific plans for County approval and disagreement arises, the Permittee, operator and/or agent, the Planning and Development Services Director or other affected party, to be determined by the Planning and Development Services Director, may request that a hearing be conducted before the Planning Commission whereby they may state the requirements which will implement the applicable conditions as intended herein. Upon receipt of a request, the Planning Commission shall conduct a hearing and make a written determination. The Planning Commission may request support and advice from a technical advisory committee.

B. The Pemittee shall be responsible for carrying out all duties set forth in the Mitigation Monitoring and Reporting program (MMRP) · adopted for this proposed project. The Permittee's compliance with said mitigation monitoring reporting program shall be subject to review and approval by the County and those agencies and officials designated in the program, or any consultant(s) approved by the County to enforce the conditions of the mitigation monitoring program. It shall be the responsibility of the Permittee to reimburse the County for all expenses incurred in the implementation of the mitigation monitoring program including any necessary enforcement actions.

G-24 LIGHTING:

On-site lighting shall be shielded and/or directed in such a way as to eliminate and reduce off-site glare particularly towards roadways. The shielding shall confine the direct rays to the site. Lighting shall be installed to provide a safe working environment in and around the facility and/or equipment meeting OSHA standards.

G-25 DEFINITIONS:

In the event of a dispute the meaning(s) or the intent of any word(s), phrase(s) and/or conditions or sections herein shall be determined by the Imperial County Planning Commission.

G-26 PERMIT TERMINATION This permit may be null and void if any information submitted by the Permittee is found false.

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SPECIFIC CONDITIONS:

*The "SPECIFIC CONDITIONS" are shown by the letter **"S"**. These conditions are conditions "site specific" to this Conditional Use Permit. The Permittee is advised that the Specific Conditions are as applicable as the other types of conditions or mitigation measures within this Conditional Use Permit, or within that are incorporated herein by reference and whether included hereinafter or not!*

S-1 The Conditional Use Permit (CUP) allows the Permittee to draw a maximum of 26 acre foot of groundwater per year for purposes in conjunction with the gypsum operation and Reclamation Plan 08-0003 and to comply with APCD's Fugitive Dust Regulations.

S-2. Water from the well shall not be used, sold, given, exported, or transported off the herein Permittee's quarry site.

S-3. A flow meter shall be installed and sealed by a California State Licensed Water Well Drilling Contractor. Permittee shall submit an annual report to the Department of Public Works and the Planning & Development Services Department indicating the yearly amount of water extracted from the well. A photograph (dated and signed) of the flow meter readings shall be included in the annual report. The report shall be received within thirty (30) days following the anniversary date of the issuance of the Conditional Use Permit. In the event of a flow meter failure, the Permittee shall be required to cease the water well operation and notify the Planning & Development Services Department. The Permittee may be allowed to temporarily substitute the flow meter for an alternative measuring device, at the approval of the Planning & Development Services Department. In this case two (2) separate reports shall be submitted as stipulated herein.

S-4. Any replacement water well shall be constructed by a California Licensed Driller in accordance with California Department of Water Resources Bulletin 74-81 and 74-90 (including any subsequent revisions), and with the Imperial County Water Well Ordinance, Section 92101.00, et seq.
Permittee shall submit copies of the "Report of Completion" (as required by California Water Code, Section 13751), by a California Licensed Driller on the construction of any water well replaced. Copies of this report shall be submitted to Environmental Health Services, Planning & Development Services Department, and Public Works within thirty (30) days of the construction or destruction of the well, this report shall include:

1. A description of the exact location of the well;
2. A detailed log of the well;
3. A description of the type and depth of casings;
4. Details of perforation;
5. The methods used for sealing off surface or contaminated waters;

6. Methods for preventing contaminated waters from one aquifer to mix with another aquifer;
7. Name of person who constructed the well.

S-5. This permit does not authorize Permittee to "slant drill" under adjoining property.

S-6. Should the water well be "abandoned" at any time for more than 360 consecutive days, Permittee shall seal/cap the well according to standards set by the State and in a manner acceptable to the County Building Official. (Abandonment shall mean as follows :)

ABANDONMENT: A well is deemed "abandoned" when it has not been used for one (1) year. An owner may have the well deemed "inactive" by filling a written notice with the Department stating his/her intentions to use the well under specific conditions and/or time frames. As evidence of his/her intentions, the conditions contained in Bulletin 74-81 (Sec. 21) shall be met. Any well that is open or whose services/operating equipment (e.g. pumps/motors/pipes, etc.) has been removed shall be deemed abandoned.

S-7. Permittee shall properly destroy any well on the property if replaced or abandoned. The well shall be destroyed according to State standards and in a manner acceptable to the County Building Official. A copy of the well driller's report by a California State Licensed Water Well Drilling Contractor shall be sent to the Department of Public Works and the Planning & Development Services Department within thirty days following the destruction of the water well.

S-8. Permittee shall construct the water well at the specific location shown on the site plan. If an alternate location on the property for the water well is desired, Permittee shall submit a revised site plan for review and approval by Environmental Health Services and the Planning & Development Services Department prior to construction of the water well.

S-9. The new water well shall be registered with the Department of Planning and Development Services to comply with the new Groundwater Ordinance. This Ordinance was enacted by the Board of Supervisors on August 6, 1996 for the purpose of preserving and managing groundwater resources in Imperial County.

S-10 FTHL Range-wide Management Strategy: USG will comply with the FTHL Range-wide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines. Mitigation Measure 3.5-2

S-11 Permittee shall comply with all mitigation measures identified in the adopted Mitigation Monitoring and Reporting Program for the United States Gypsum Company Expansion/Modernization Project, as applicable.

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NOW THEREFORE, County hereby issues Conditional Use Permit #08-0003, Permittee hereby accepts such permit upon the terms and conditions set forth herein:

IN WITNESS THEREOF, the parties hereto have executed this Agreement the day and year first written.

PERMITTEE:

By:______________________________ 6-18-2008
Representative of U.S. Gypsum Date
LONNIE R. DYCK
PLANT MANAGER

COUNTY OF IMPERIAL, a political subdivision of the STATE OF CALIFORNIA:

By:______________________________ 6-25-08
JURG HEUBERGER, AICP, CEP, Date
Planning and Development Services Director

FOR PERMITTEE NOTARIZATION

STATE OF CALIFORNIA
COUNTY OF IMPERIAL} S.S.

On June 18, 2008 before me, Patricia A. Valenzuela, a Notary Public in and for said County and State, personally appeared Lonnie R. Dyck who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

PATRICIA A. VALENZUELA
Commission # 1516866
Notary Public - California
Imperial County
My Comm. Expires Oct 28, 2008

WITNESS my hand and official seal

Signature Patricia A. Valenzuela

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document Conditional Use Permit
Number of Pages 15 Date of Document March 18, 2008
Signer(s) Other Than Named Above ——

FOR COUNTY NOTARIZATION

STATE OF CALIFORNIA

COUNTY OF IMPERIAL} S.S.

On JUNE 25, 2008 before me, Patricia A. Valenzuela a Notary Public in and for said County and State, personally appeared Jurg Heuberger, who proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/~~are~~ subscribed to the within instrument and acknowledged to me that he/~~she~~/~~they~~ executed the same in his/~~her~~/~~their~~ authorized capacity(~~ies~~), and that by his/~~her~~/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal

Signature Patricia A. Valenzuela

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document Conditional Use Permit

Number of Pages 15 Date of Document June 18, 2008

Signer(s) Other Than Named Above ———

CUP agreement Draft Final water well

PATRICIA A. VALENZUELA
Commission # 1516866
Notary Public - California
Imperial County
My Comm. Expires Oct 28, 2008

United States Gypsum Company
550 W. Adams
Chicago, Illinois 60661-3676
(312) 436-4000

REMITTANCE ADVICE

No. **100292435**

Date : 06-13-2008   Vendor Name : IMPERIAL COUNTY RECORD   Vendor No. : 104133

INVOICE NO.	INVOICE DATE	DESCRIPTION	DISCOUNT AMOUNT	NET AMOUNT
CUP08-0002	10-JUN-08	301 PLC	0.00	10.00
CUP08-0003	10-JUN-08	301 PLC	0.00	49.00
CUP08-0004	10-JUN-08	301 PLC	0.00	61.00
DETACH BEFORE CASHING		TOTAL	0.00	120.00

THIS CHECK HAS A TRUE PAPER MACHINE WATERMARK. HOLD AT AN ANGLE TO VIEW. THE WORD VOID WILL APPEAR IF THIS CHECK IS COPIED IN ANY MANNER.

USG

United States Gypsum Company
550 W. Adams
Chicago, Illinois 60661-3676
(312) 436-4000

Bank of America
Controlled Disbursement
Bank of America, N.A.
Atlanta, Dekalb County, Georgia

64-1278
611 GA

No. **100292435**

Date 13-JUN-08

Pay: ****************************One Hundred Twenty Dollars And 00 Cents

$ *********120.00

To The Order Of:

IMPERIAL COUNTY RECORDER - CLERK
940 W MAIN STREET
EL CENTRO, CA 92243

SIGNATURE AREA HAS A DISAPPEARING BACKGROUND

Karen L. Leets
Authorized Signature

⑈100292435⑈ ⑆061112788⑆ 335 900 0935⑈

THE BACK SIDE OF THIS CHECK HAS THE USG LOGO PRINTED IN HEAT SENSITIVE INK. RUB FINGER ON INK AND IT WILL DISAPPEAR.

APPENDIX B-2:
APPLICATION LETTER

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USG

RECEIVED

JUL 13 2021

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

June 15, 2021

Jim Minnick, Director
Planning & Development Services
County of Imperial
801 Main Street
El Centro, CA 92243

Subject: USG Fish Creek Quarry, Well No. 3, Conditional Use Permit (CUP)

Dear Mr. Minnick:

In late 2019, United States Gypsum Company ("USG") submitted an application (the "Application") to the County and deposited funds for the required fees for a conditional use permit ("CUP") for new water well and associated pipeline ("Quarry Well No. 3") on a private parcel (APN 033-020-009-000) located approximately three miles northeast of USG's Fish Creek Quarry ("Quarry"). The water produced by Quarry Well No. 3 will be used by USG for processing purposes at the Quarry, including dust suppression and transplanting of desert plant species during reclamation, and may also provide a supply of potable water for use by employees. The water will be transported to the Quarry via a proposed ten-inch diameter underground pipeline that will run along the adjacent USG tramway right-of-way (the "Pipeline").

Quarry Well No. 3 will replace an existing well (Quarry Well No. 2) that no longer produces a sufficient amount of water to meet USG's needs. Currently, water needed for Quarry operations is being transported to the site daily via rail tank car on the existing tramway. The water originates from wells near the community of Ocotillo that is piped to USG's Plaster City Plant (the "Plant") and then transported to the Quarry.

A copy of the Application, including a figure labeled "Exhibit D" that depicts the proposed location of Quarry Well No. 3 and the Pipeline in relation to the Quarry, is attached hereto as <u>Exhibit 1</u>. A more detailed and updated description of the project is attached hereto as <u>Exhibit 2</u>.

The balance of this letter provides additional background information concerning the Application and proposes that a supplemental environmental impact report be prepared pursuant to the requirements of the California Environmental Quality Act ("CEQA").

BACKGROUND

A water well for Quarry operations was permitted in 1983 under CUP No. 635-83 for a maximum withdrawal of 7,000 gallons per day (Quarry Well No. 1). The well was drilled in basin fill on the eastern side of the wash. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Consequently, the Quarry has historically received potable water for drinking and sanitary uses via a narrow-gauge railroad tank car from the Plant.

Production from Quarry Well No. 1 declined due to incrustation and became unusable. Therefore, a second well (Quarry Well No. 2) was drilled in 1993 to replace the original well pursuant to CUP No. 635-83, which was re-issued for the new well. However, water production from Quarry Well No. 2 declined steadily over time.

Quarry Well No. 2 has been rehabilitated without a significant improvement in water production. Currently, Quarry Well No. 2 produces approximately 4,800 gallons per day (gpd), which is insufficient to meet USG's current need for Quarry operations. Therefore, USG proposes to replace existing Quarry Well No. 2 with proposed Quarry Well No. 3 on USG-owned land located approximately 3 miles northeast of the Quarry. Quarry Well No. 3 would also replace an existing test well that was installed in 2001 at the proposed location of Quarry Well No. 3.

Previous Environmental Impact Report

Proposed Quarry Well No. 3 is part of a larger project involving the expansion and modernization of USG's Plant and Quarry as described in the Environmental Impact Report/Environmental Impact Statement for the United States Gypsum Company Expansion/Modernization Project (the "EIR"), which was certified by the Imperial County Board of Supervisors (the "Board") on March 18, 2008 pursuant to the requirements of CEQA. As such, the potential environmental impacts of proposed Quarry Well No. 3 were previously evaluated in the EIR.

Previous CUP Approval

On March 18, 2008, the Board approved a Conditional Use Permit for Quarry Well No. 3 in Case No. CUP-08-0003 (see recorded document 2008-018433, attached hereto as Exhibit 3). However, USG did not initiate or obtain construction permits for Quarry Well No. 3 within the time period set forth in Imperial County Code section 90203.13. Therefore, CUP-08-0003 has expired.

The requested conditional use permit for Quarry Well No. 3 would essentially reinstate CUP-08-0003. The location and characteristics of the proposed Quarry Well No. 3 have not changed since it was approved in 2008, and remain as described in the EIR and in the original application for CUP-08-0003.

Pending Application for Approvals from the California Department of Fish and Wildlife

The EIR noted that the USG would be required to obtain a Lake and Streambed Alteration Agreement ("LSAA") from the California Department of Fish and Wildlife ("CDFW") for the Quarry expansion and identified CDFW as a responsible agency for the project under CEQA.

In 2014, USG filed an application with the CDFW for approval of a LSAA and related permits for the expansion of the Quarry as described in the EIR (Notification 1600-2014-0067-R6). Subsequently, during a meeting on March 25, 2019, CDFW staff informed USG that additional information concerning the potential environmental impacts of Quarry operations on desert pupfish habitat and Peninsular bighorn sheep will need to be incorporated into the EIR. Among other things, this additional information includes certain biological studies that had been prepared after County certification of the EIR in 2008 in connection with the NEPA process for certain federal approvals that were required for Quarry expansion.

In recognition of the fact that USG would be filing an application with the County for approval of a new conditional use permit for proposed Quarry Well No. 3, CDFW staff proposed that the County (rather than CDFW) prepare a supplemental environmental impact report ("SEIR") that would serve as the CEQA document for purposes of both the requested conditional use permit and the applications that are currently pending with the CDFW. Under this approach, the County would retain its status as the lead agency for the overall project for CEQA purposes, and CDFW would continue in its role as a responsible agency.

SUPPLEMENTAL EIR

In accordance with the CDFW's proposal, USG hereby requests that the County, as the lead agency under CEQA, prepare a SEIR in connection with USG's Application, and that the County consult with CDFW (as a responsible agency) to ensure that the SEIR also serves CDFW's purposes. It is USG's understanding that, as a result of USG's voluntary request that the County prepare a SEIR, there will be no need to refer this matter to the County's Environmental Review Committee for its recommendation as to the appropriate CEQA document.

USG further understands that it will be responsible for all required fees and costs associated with the preparation of the SEIR. In this regard, USG has reviewed the proposal from Benchmark Resources for preparation of the SEIR, a copy of which is attached hereto as Exhibit 4. USG approves this proposal and hereby requests that Benchmark Resources be selected by the County to prepare the SEIR without first obtaining competitive bids from other consultants.

Thank you for your consideration.

Sincerely,

Luis Carrazco
Plant Manager

Exhibits
- 1 – Application (including Exhibit D)
- 2 – Expanded/updated project description
- 3 - CUP-08-0003 (recorded document 2008-018433)
- 4 – Benchmark Proposal

cc: Patricia Valenzuela

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APPENDIX C:
AIR QUALITY ANALYSIS

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APPENDIX C-1:
AIR QUALITY MODELING ANALYSIS

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AIR QUALITY MODELING ANALYSIS
US GYPSUM COMPANY - SOUTHWEST PLANT

PLASTER CITY, IMPERIAL COUNTY, CALIFORNIA

Prepared by:

Jeff DeToro ▪ Senior Consultant
Rafe Christopherson ▪ Consultant

TRINITY CONSULTANTS
Two Pierce Place
Suite 1820
Itasca, Illinois 60143
(630) 467-9100

September 2, 1999

Project 991401.0053

LIST OF TABLES

LIST OF FIGURES

1. PROJECT IDENTIFICATION INFORMATION

US Gypsum Company (USG) has submitted an Authority to Construct application to the Imperial County Air Pollution Control District (ICAPCD) for the installation and operation of a new plaster board line at its existing Southwest Plant, located in the town of Plaster City, California. As part of this Authority to Construct application, an air dispersion modeling analysis is required to demonstrate that emissions from the proposed sources will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or California Ambient Air Quality Standards (CAAQS). This report summarizes the methodology and results of the air quality dispersion modeling analysis performed for the Authority to Construct application.

All analyses presented in this report conform to current United States Environmental Protection Agency (U.S. EPA) and ICAPCD modeling guidelines.[1]

1.1 FACILITY LOCATION

The Southwest Plant is located in the town of Plaster City on County Highway S80. Plaster City is situated in Imperial County, approximately 12 miles north of the California-Mexico border and approximately 20 miles west of El Centro. The Southwest Plant property is divided by Highway S80 into two parts: the southern portion of the property contains most of the manufacturing facility and buildings while the northern portion contains the main office, covered rock storage, and five rock storage silos. Public access to the southern portion of the property is blocked by a fence. No such barrier exists for the northern portion of the property.

Sections 3 and 4 of this document contain a facility plot plan showing the locations of the existing line #2 sources that will be removed and the proposed sources. An area map consisting of the Southwest Plant fenceline boundary overlaid onto a detailed map of the area. The area map shows terrain contours and the facility property relative to predominant geographical features such as highways, roads, and streams, as well as significant landmarks such as buildings and water towers.

1.2 UTM COORDINATE SYSTEM

In all modeling analysis input and output data files, the location of emission sources, structures, and receptors are represented in the Universal Transverse Mercator (UTM) coordinate system. The U.S. EPA requires that coordinates for permits and air dispersion modeling analyses be represented in the UTM system. The UTM grid was originally created by the Defense Mapping Agency of the United States as a special grid for military use throughout the world.[2] In this grid, the world is divided into 60 north-south zones, each covering a strip 6° wide in longitude. The Plaster City area of South Central California is located in UTM Zone 11. In each UTM Zone, coordinates are measured north and east in

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[1] Appendix W, Code of Federal Regulations, Title 40—Protection of Environment, Part 51, July 1, 1997.

[2] U.S. Department of the Interior and the U.S. Geological Survey Earth Science Information Center (ESIC), The Universal Transverse Mercator (UTM) Grid Factsheet, May 1993.

meters. The northing values are measured continuously from zero at the Equator, in a northerly direction. A central meridian through the middle of each 6° zone is assigned an easting value of 500,000 meters. Grid values to the east of this central meridian, as in the case of the Southwest Plant, are greater than 500,000. The center of the Southwest Plant is located near UTM coordinates 607.240 kilometers (km) East and 3,628.440 km North.

All emission point, building, and fenceline locations digitized from USG plot plans are converted to equivalent UTM coordinates.

2.1 PROCESS DESCRIPTION

The equipment being installed at the Southwest Plant is used to manufacture gypsum wallboard and other gypsum products. The equipment being installed for this manufacturing process can be found in Table 3-1.

In order to produce gypsum wallboard, gypsum ($CaSO_4 \cdot 2H_2O$), a white or gray naturally-occurring mineral, is partially dehydrated or calcined to produce calcium sulfate hemihydrate ($CaSO_4 \cdot 0.5H_2O$) (commonly referred to as stucco). This material is then converted to wallboard by crushing and stockpiling gypsum ore. The stockpiled ore is further crushed and screened to about 50 millimeters (2 inches) in diameter as needed. The mined ore is then dried in a heated roller mill and conveyed to a second roller mill, where it is ground such that 90% of it is less 149 micrometers (μm). This material is then fed to kettle calciners, where it is heated to remove 75% of the chemically-bound water to form stucco. In kettle calciners, the gypsum is indirectly heated by hot combustion gas passing through flues in the kettle, and the stucco product is discharged into a "hot pit" located below the kettle.

The stucco product is first mixed with dry additives and then mixed with water, soap foam, accelerators and shredded paper, or pulpwood in a pin mixer at the head of the board forming line. The slurry is then spread between two paper sheets that serve as a mold (the edges of the paper are board). As the wet board travels the length of the conveying line, the calcium sulfate hemihydrate combines with the water in the slurry to form solid calcium sulfate dihydrate, or gypsum, resulting in a rigid board. The board is rough-cut to length, and it enters a multideck kiln dryer, where it is dried by direct contact with hot combustion gases. The dried board is conveyed to the board end sawing area, where it is trimmed and bundled for shipment.

2.2 TYPE OF PERMIT REVIEW

Imperial County, in which the Southwest Plant is located, has been designated by the U.S. EPA as moderate nonattainment for particulate matter of 10 microns in size or less (PM_{10}) and transitional nonattainment for ozone.[3] Imperial County has been categorized as in attainment or unclassifiable for all other criteria pollutants. The Southwest Plant is a gypsum processing facility, which is not one of the 28 named Prevention of Significant Deterioration (PSD) stationary source categories with 100 ton per year (tpy) major source thresholds. Since facility-wide emissions of each criteria pollutant are less than 250 tpy, the Southwest Plant is considered to be a minor source with respect to the federal PSD program.

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[3] Code of Federal Regulations, Title 40-Protection of the Environment, Parts 81-85, §81.305, July 1, 1998.

2.3 POLLUTANTS EVALUATED

Emissions associated with the gypsum manufacturing process include PM_{10}, nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and volatile organic compounds (VOC). The pollutants that are significantly increasing as a result of the proposed modification are NO_2 and CO; thus, this modeling analysis is conducted to demonstrate that the corresponding impacts of these pollutants will not exceed applicable modeling levels (e.g. CAAQS and NAAQS).

The maximum modeled off-property, ground-level concentrations of post-modification, plant-wide emissions of NO_2 and CO are compared to the corresponding CAAQS and NAAQS levels for each pollutant and averaging period.

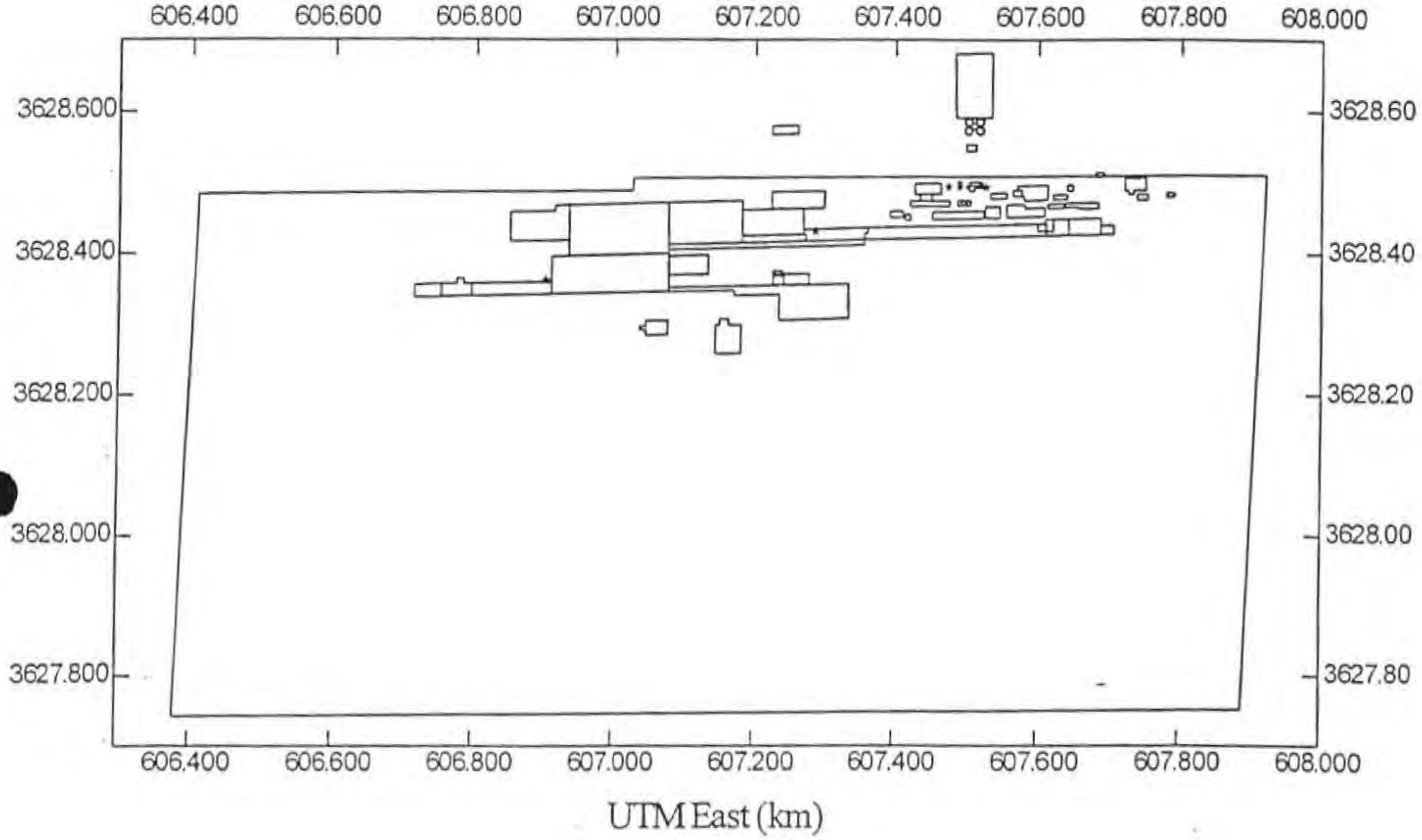
3. PLOT PLAN

A plot plan of the Southwest Plant and associated fenceline is shown in Figure 3-1. Figures 3-2A-C displays close-up views of the main manufacturing buildings. The sources depicted in Figures 3-2A-C are described below in Table 3-1. Please note that only those sources at the facility that emit the pollutants being modeled in this analysis (NO_2 and CO) are highlighted in the plots and tables.

TABLE 3-1. LINE #2 AND PROPOSED SOURCES AT THE SOUTHWEST PLANT.

Source Status	ID	Description
Existing (will be removed)	K	Line #2 Gypsum Board Drying Kiln
Proposed	LP_AIR	L.P. Air Heater
Proposed	CP_AIR	C.P. Air Heater
Proposed	N29	Kiln Exhaust

FIGURE 3-1. SOUTHWEST PLANT PLOT PLAN.



★- Indicates source location

FIGURE 3-2A. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.

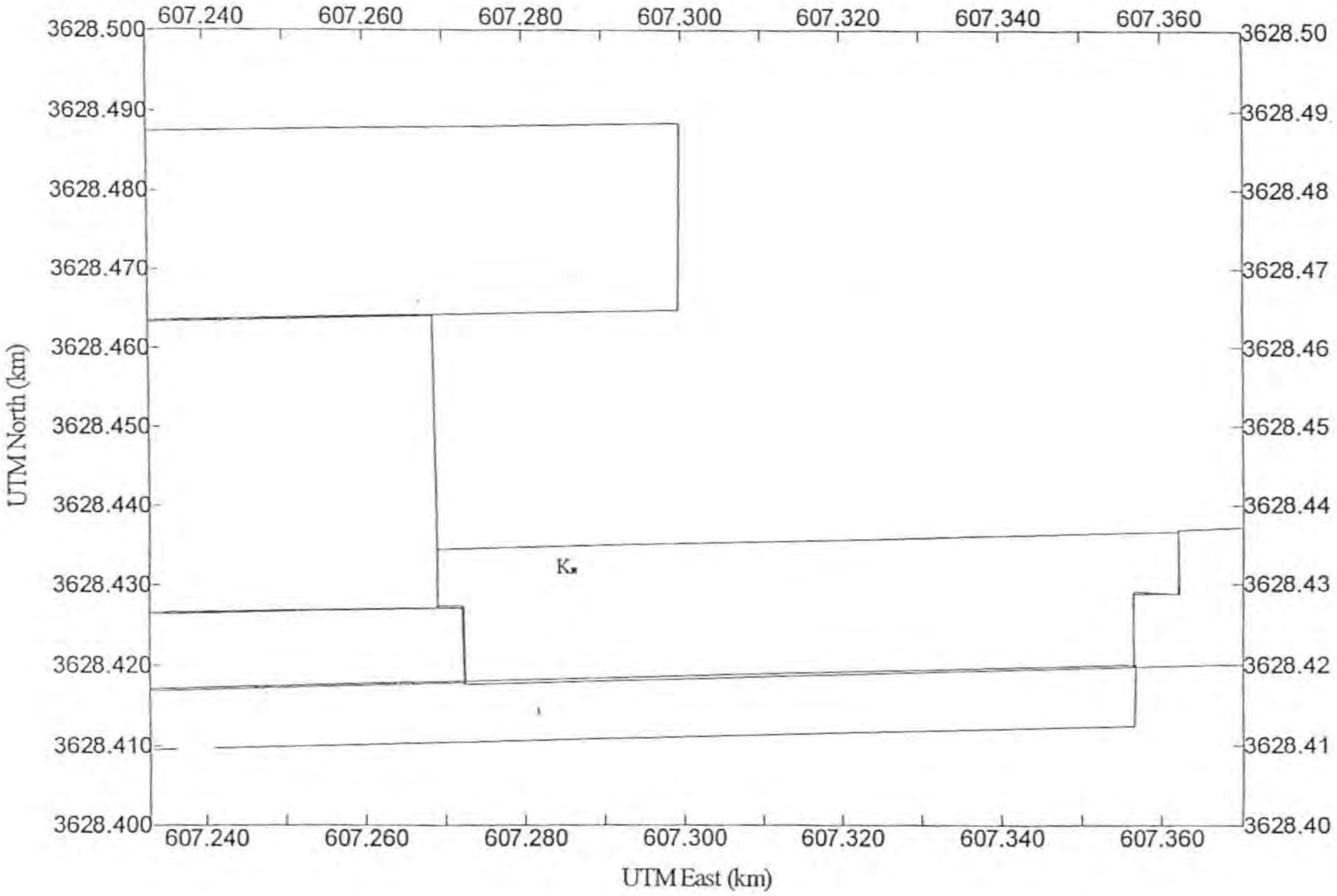


FIGURE 3-2B. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.

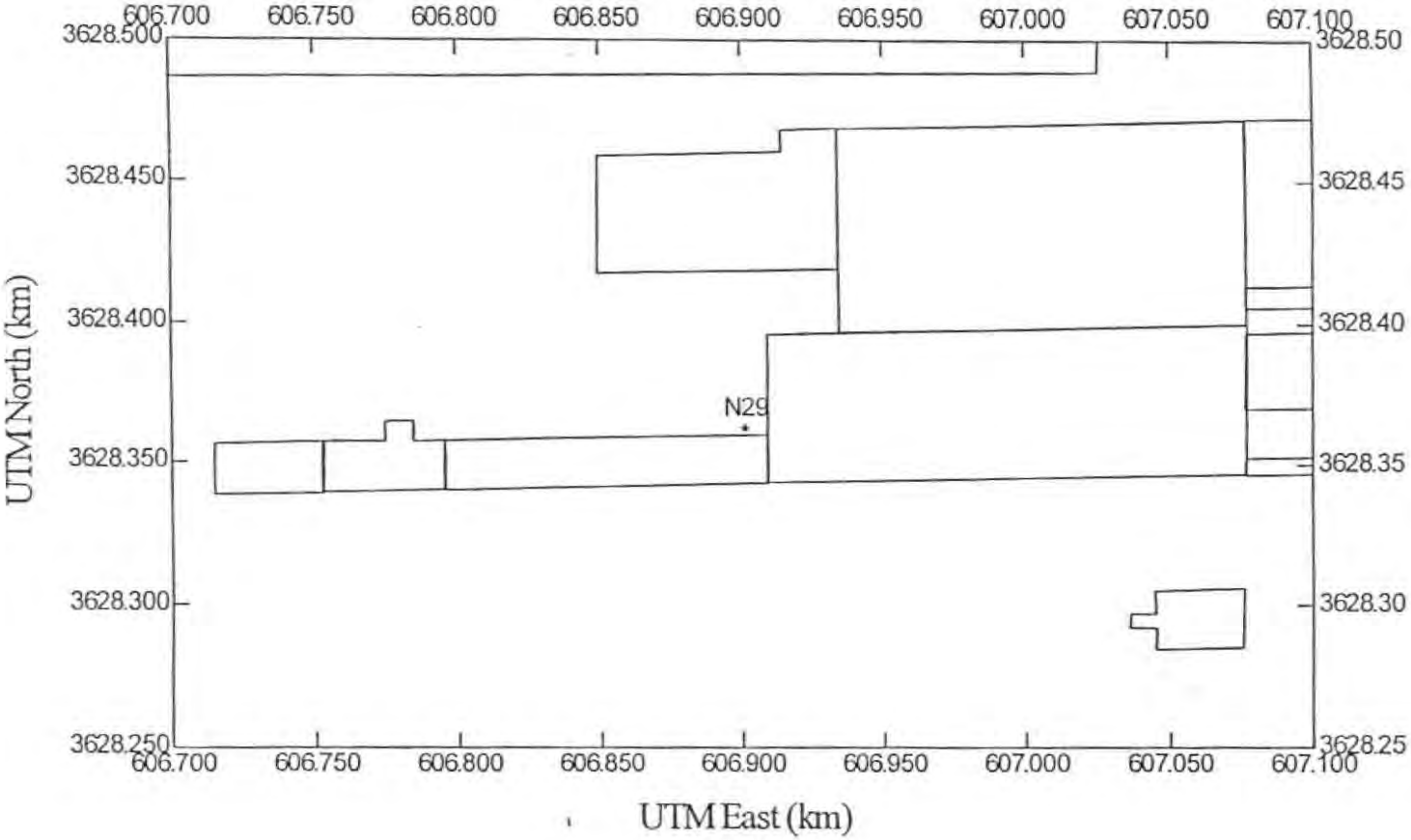
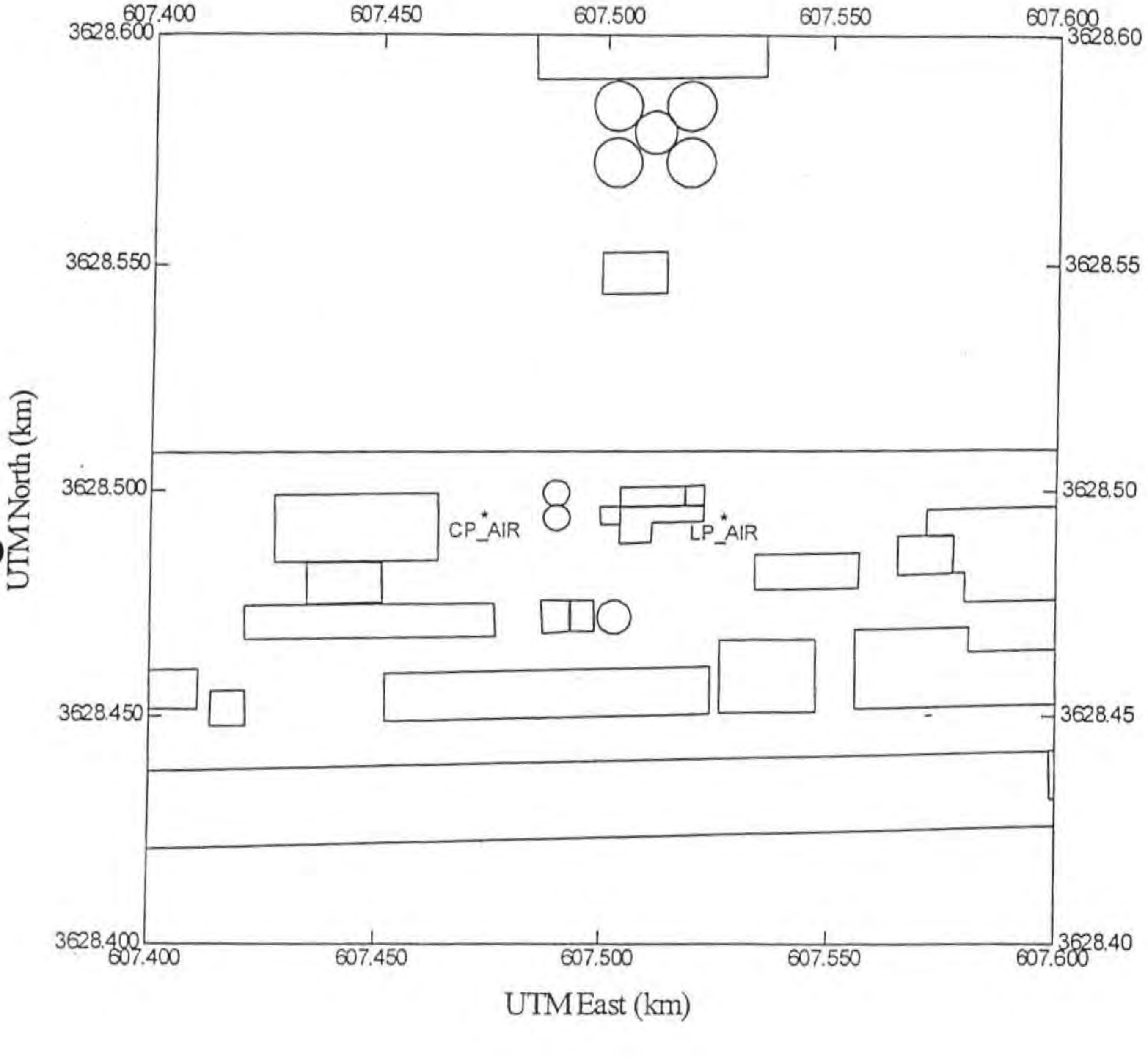
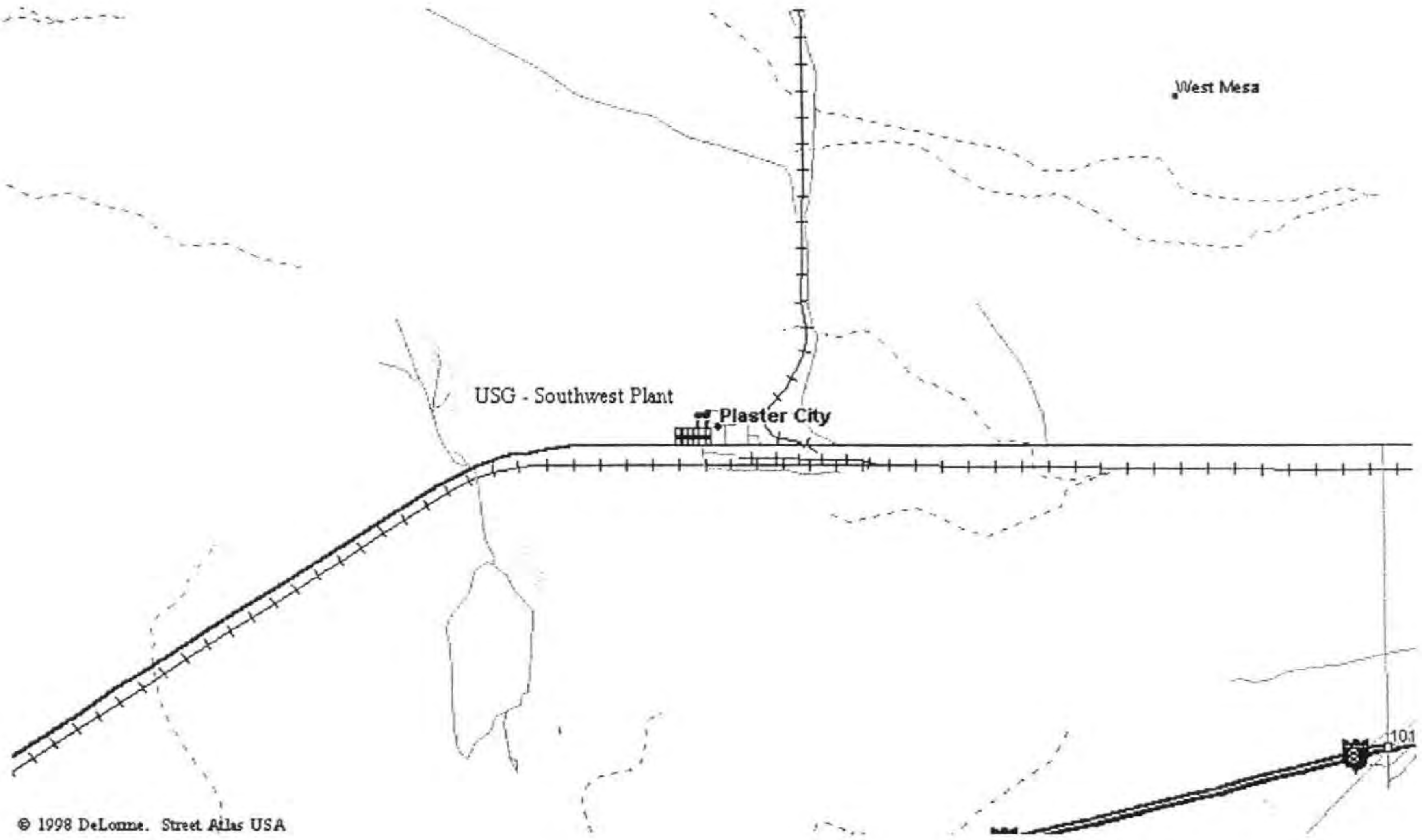


FIGURE 3-2C. LOCATION OF SOURCES AT THE SOUTHWEST PLANT.



4. AREA MAP

FIGURE 4-1. SOUTHWEST PLANT AREA MAP.



5.1 PROPOSED SOURCES

This section provides a brief discussion of stack parameters and emission rates for the proposed sources at the Southwest Plant.

Table 5-1 summarizes the stack parameters for the proposed sources in English units. Emission rates for the proposed sources are included in Table 5-3 at the end of this section. Descriptions of the proposed sources can be found in Table 3-1.

TABLE 5-1. STACK PARAMETERS FOR PROPOSED SOUTHWEST PLANT SOURCES.

Source ID	UTM East (km)	UTM North (km)	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)
LP_AIR	607.527	3628.494	25.0	0.67	178.4	200
CP_AIR	607.474	3628.495	90.0	6.00	30.4	322
N29	606.901	3628.363	17.0	8.52	50.0	203

5.2 REMOVAL OF EXISTING LINE #2 SOURCES

As stated in Section 2.3, USG is modeling post-modification emissions of the criteria pollutants CO and NO_2 to assess compliance with the CAAQS and NAAQS. There are four existing line #2 sources at the Southwest Plant that will be removed once the proposed line is installed. These sources are the #2 End Saw (31), the #2 Kerf (32), the #2 Glip Saw (33), and the #2 Board Drying Kiln (K). Source K is the only line #2 source that emits one or more of the pollutants modeled in this analysis. Table 5-2 summarizes the stack parameters for this additional source in English units. Emission rates for the additional modeled source are included in Table 5-3 at the end of this section. A description of this existing line #2 source can be found in Table 3-1.

TABLE 5-2. STACK PARAMETERS FOR EXISTING LINE #2 SOUTHWEST PLANT SOURCE.

Source ID	UTM East (km)	UTM North (km)	Height (ft)	Diameter (ft)	Velocity (ft/s)	Temperature (°F)
K	607.286	3628.432	26	5.42	27.7	203.5

TABLE 5-3. SUMMARY OF EMISSION RATES MODELED.

	NO_X Emission Rate			CO Emission Rate		
Stack #	tpy	lb/hr	g/sec	tpy	lb/hr	g/sec
LP_AIR	0.160	0.037	0.0046026	0.370	0.084	0.0106436
CP_AIR	18.830	4.299	0.5416730	7.530	1.719	0.2166117
N29	36.450	8.322	1.0485385	85.976	19.629	2.4732277
[illegible]	27.010	6.167	0.7769829	48.730	11.126	1.4017910
Totals	**28.430**	**6.491**	**0.818**	**45.146**	**10.307**	**1.299**

6. MODELING METHODOLOGY

This section discusses the modeling methodology that is used to demonstrate compliance with the applicable standards. The techniques used in the air dispersion modeling analysis are consistent with current U.S. EPA and ICAPCD modeling procedures.[4]

6.1 IMPACT ANALYSIS

An impact analysis is conducted for NO_2 and CO in order to determine whether the impacts associated with the post-modification Southwest Plant emissions comply with applicable NAAQS and CAAQS. In the impact analysis, the maximum off-property, ground-level concentrations of NO_2 and CO are calculated for comparison to the corresponding NAAQS and CAAQS levels.

6.2 DISPERSION MODEL SELECTION

Two levels of air quality dispersion model sophistication exist: screening and refined dispersion modeling. Screening models may be used to eliminate more extensive modeling; however, the results must demonstrate to the satisfaction of the permitting agency that all applicable air quality analysis requirements are adhered to. Screening models produce conservative estimates of ambient impacts in order to reasonably ensure that maximum ambient concentrations will not be underestimated. If the resulting estimates from a screening model indicate a violation of or a threat to the applicable standards, the applicant must use a refined model and/or refined emissions assumptions to re-estimate ambient concentrations. A refined dispersion model provides more accurate estimates of a source's impact and consequently requires more detailed and precise input data than does a screening model.

Based on the likelihood that a screening model would result in unacceptable impacts, a refined dispersion model is used in the air dispersion modeling analysis in support of the Authority to Construct application.

6.2.1 INDUSTRIAL SOURCE COMPLEX MODEL

The latest version (dated 99155) of the Industrial Source Complex Short Term Version 3 (ISCST3) model is used to estimate maximum off-property, ground-level concentrations due to emissions from the sources at the Southwest Plant. ISCST3 is the U.S. EPA's latest release of the Industrial Source Complex model. This model is used extensively in regulatory driven air quality modeling studies and is the workhorse of U.S. EPA regulatory models. Version 3 was first made available to the public in final form in early August 1995.

In this analysis, modeling with ISCST3 is performed using the regulatory default option, which includes stack heights adjusted for stack-tip downwash, buoyancy-induced dispersion, and final plume rise. Ground-level concentrations occurring during "calm" wind conditions are calculated by the model using the calm processing feature. Regulatory default values for

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[4] Appendix W, Code of Federal Regulations, Title 40–Protection of Environment, Part 51, July 1, 1998.

wind profile exponents and vertical potential temperature gradients are used since no representative on-site meteorological data are available. As per U.S. EPA requirements, direction-specific building dimensions are used for both the Schulman-Scire and the Huber-Snyder downwash algorithms.

7. LAND-USE ANALYSIS

An analysis must be performed to determine if the area surrounding the Southwest Plant should be classified as urban or rural for air dispersion modeling purposes. The vast majority (> 90%) of the land surrounding the Southwest Plant is desert shrubland (rural) and cannot be classified as residential, commercial, or industrial. Since the majority of the area around the Southwest Plant is considered to be rural, rural dispersion coefficients are utilized in the modeling analysis.

8. TERRAIN

The town of Plaster City is situated on a relatively flat plain approximately 20 miles west of the El Centro. As a general rule, terrain elevations slowly increase from east to west across the area. As shown on the 7.5 minute USGS map for Plaster City Quadrangle, the base elevation in the vicinity of the Southwest Plant is approximately 97 feet above mean sea level. Terrain elevations are all below the minimum facility stack heights within one mile of the facility; therefore, all sources, buildings, and receptors are modeled as flat terrain.

9. BUILDING WAKE EFFECTS (DOWNWASH)

The emissions units at the Southwest Plant have been evaluated in terms of their proximity to nearby structures. The purpose of this evaluation is to determine if stack discharges might become caught in the turbulent wakes of these structures. Wind blowing around a building creates zones of turbulence that are greater than if the building were absent. The current version of the ISCST3 dispersion model provides for a revised treatment of building wake effects which, for certain emissions units, uses wind direction-specific building dimensions following the algorithms developed by Schulman and Hanna.[5] The minimum stack height not subject to the effects of downwash is defined by the formula:[6]

$$G = H + 1.5L$$

Where: G = Minimum Good Engineering Practice (GEP) stack height
H = Height of the structure
L = Lesser dimension (height or projected width of structure)

This equation is limited to stacks located within 5L of the structure. Stacks located at distances greater than 5L are not subject to the wake effects of the structure. If there is more than one stack at a given facility, the above equation must be successively applied to each stack. If more than one structure is involved, the equations must also be successively applied to each structure.

Direction-specific building dimensions and the dominant downwash structure parameters used as input to the dispersion models were determined using the *BREEZE-WAKE/BPIP* software, developed by Trinity Consultants, Inc. This software incorporates the algorithms of the U.S. EPA sanctioned Building Profile Input Program (BPIP), version 95086.[7] BPIP is designed to incorporate the concepts and procedures expressed in the GEP Technical Support document, the Building Downwash Guidance document, and other related documents.

The output from the BPIP downwash analysis lists the names and dimensions of the structures, and the emissions unit locations and heights. In addition, the output contains a summary of the dominant structure for each emissions unit (considering all wind directions) and the actual building height and projected widths for all wind directions. This information is then incorporated into the data files for the ISCST3 model. Table 9-1 summarizes the names and heights of the structures that are included in the downwash analysis. Figure 9-1 shows a close-up of the buildings at the plant and the corresponding building numbers for reference. Appendix A includes a hardcopy of the downwash output file.

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[5] L.L. Schulman, S.R. Hanna, Evaluation of Downwash Modifications to the Industrial Source Complex Model, *JAPCA* 36:258-264, 1986.

[6] U.S. EPA, Office of Air Quality Planning and Standards, *Guidelines for Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) (Revised)*, Research Triangle Park, North Carolina, EPA 450/4-80-023R, June, 1985.

[7] United States Environmental Protection Agency, *User's Guide to the Building Profile Input Program*, Research Triangle Park, NC, EPA-454/R-93-038.

TABLE 9-1. SUMMARY OF BUILDINGS INCLUDED IN DOWNWASH ANALYSIS.

Building Number	Building/Tier Name	Height (ft)	Building Number	Building/Tier Name	Height (ft)
N1	Waste Building - Tier #1	26.5	18	Calciner Feed - Tier #1	29.5
N2	Waste Building - Tier #2	32.5	19	Calciner Feed - Tier #2	48.0
N3	Kiln Building	51.5	20	Existing Warehouse #2	14.0
N4	Warehouse - Tier #1	34.0	21	Storeroom	14.0
N5	Warehouse - Tier #2	34.0	22	Crusher Building - Tier #1	10.0
N6	Truck Tarping	32.0	23	Crusher Building - Tier #2	46.0
N7	Train Canopy	32.0	24	Crusher Building - Tier #3	57.0
N8	Paper Storage	25.0	25	Crusher Building - Tier #4	37.0
N9	Waste Reclaim	25.0	26	Mill Office	12.5
N10	High Mill - Tier #1	82.0	27	Packing House	46.0
N11	High Mill - Tier #2	56.0	28	East Mill - Tier #1	11.0
N12	High Mill - Tier #3	82.0	29	East Mill - Tier #2	51.0
N13	Covered Rock Storage	82.0	30	Storage Building #1	13.0
N14	Substation	12.0	31	Storage Building #2	10.0
1	Existing Warehouse - Tier #1	35.1	32	Storage Building #3	13.0
2	# 1 Line Building	34.1	33	Main Shop	28.0
3	Existing Warehouse - Tier #2	29.0	34	Plant Engineering	12.0
4	Existing Warehouse - Tier #3	32.0	35	Electric Shop	16.0
5	Center Beam Loading	31.0	36	MMD Crusher	13.0
6	Existing Warehouse - Tier #4	16.4	37	Tube Mill	47.0
7	Board Plant - Tier #1	12.3	38	#6 Kettle Building	70.0
8	Board Plant - Tier #2	23.0	T1	Tank - Green Giant	80.0
9	Board Plant - Tier #3	62.5	T2	Tank - Calciner Feed Tank	50.0
10	Board Plant - Tier #4	23.4	S1	Crusher Silo #1	50.0
11	Board Plant - Tier #5	41.3	S2	Crusher Silo #2	50.0
12	Board Plant - Tier #6	24.0	S3	Rock Storage Silo #1	40.0
13	Main Office	10.0	S4	Rock Storage Silo #2	40.0
14	Quality Building	15.0	S5	Rock Storage Silo #3	40.0
15	Control Building	15.0	S6	Rock Storage Silo #4	40.0
16	Raymond Mills - Tier #1	50.0	S7	Rock Storage Silo #5	40.0
17	Raymond Mills - Tier #2	80.0			

FIGURE 9-1A. LOCATION OF BUILDINGS AT THE SOUTHWEST PLANT.

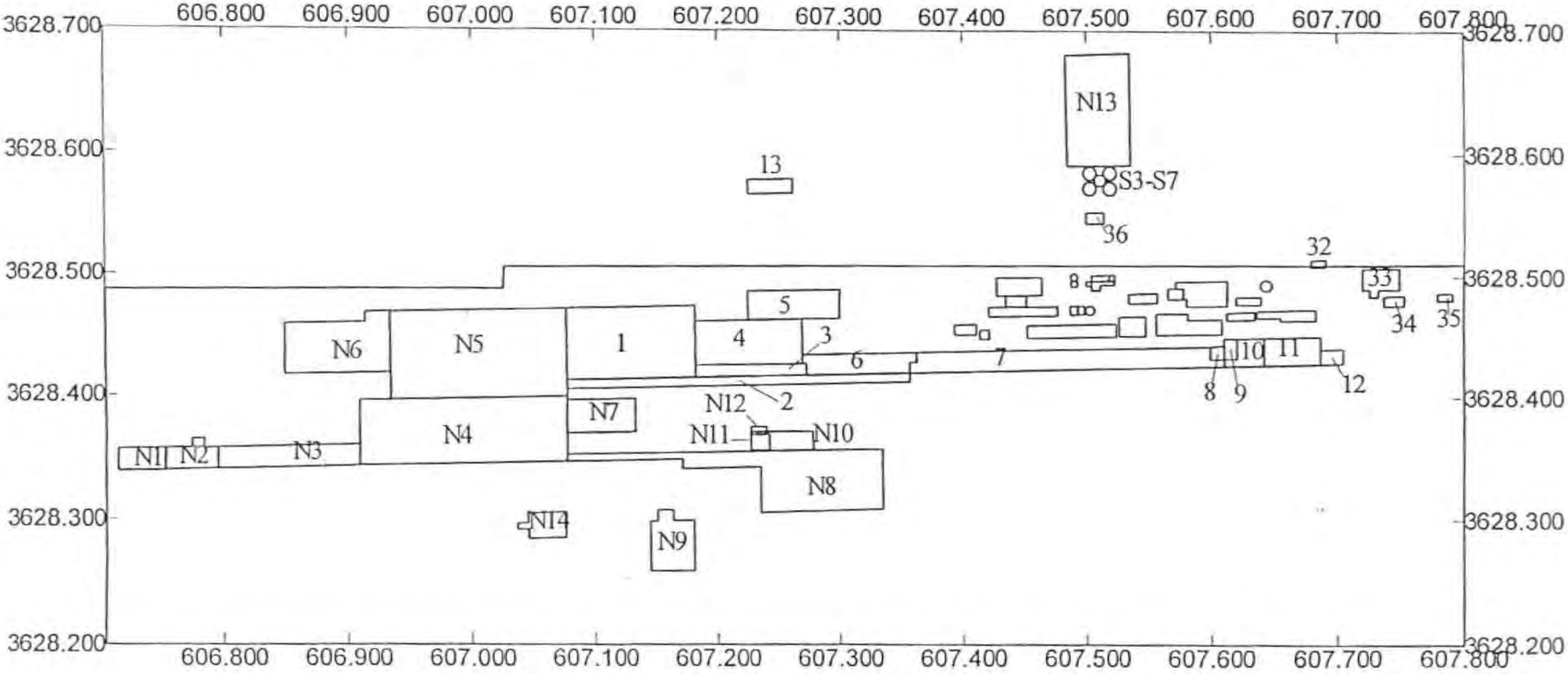
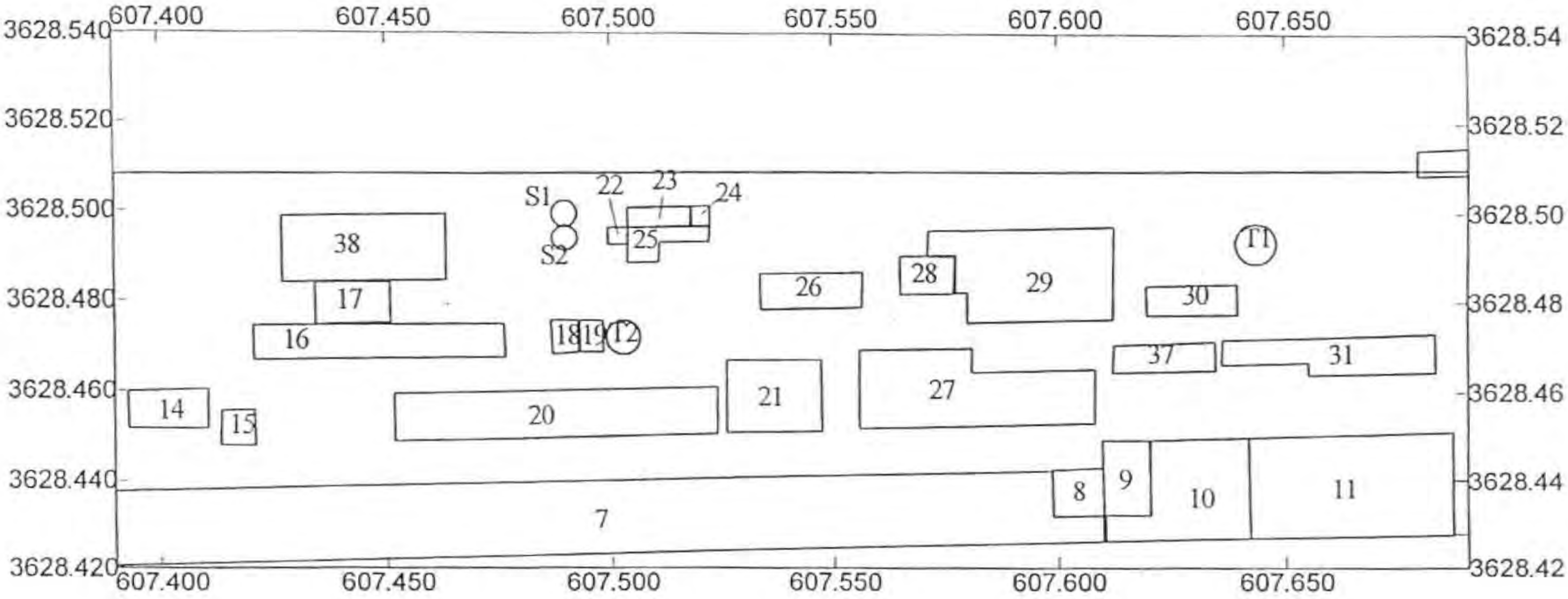


FIGURE 9-1B. LOCATION OF BUILDINGS AT THE SOUTHWEST PLANT (CONTINUED).



10. RECEPTOR GRIDS

In the air dispersion modeling analysis, ground-level concentrations are calculated within four Cartesian receptor grids. These four grids cover a region extending 10 km from all edges of the Southwest Plant fenceline. Initially, a "coarse grid" that contains 1-km spaced receptors extending 10 km from the fenceline is employed to isolate a localized area of maximum concentrations. Since maximum concentrations are found to be on or very near the facility fenceline, the remaining grids are defined as follows: 1) a "fenceline" grid containing 100-meter spaced receptors extending along the fenceline of the facility, 2) a "fine grid" containing 100-meter spaced receptors extending 1.0 km from the fenceline exclusive of receptors on the fenceline grid and receptors within the fenceline, and 3) a "medium" grid containing 500 meter spaced receptors extending 5 km from the fenceline. Figures 10-1 through 10-4 show the receptor locations for the fenceline, fine, medium, and coarse Cartesian receptor grids, respectively.

FIGURE 10-1. RECEPTOR LOCATIONS FOR THE FENCELINE GRID.

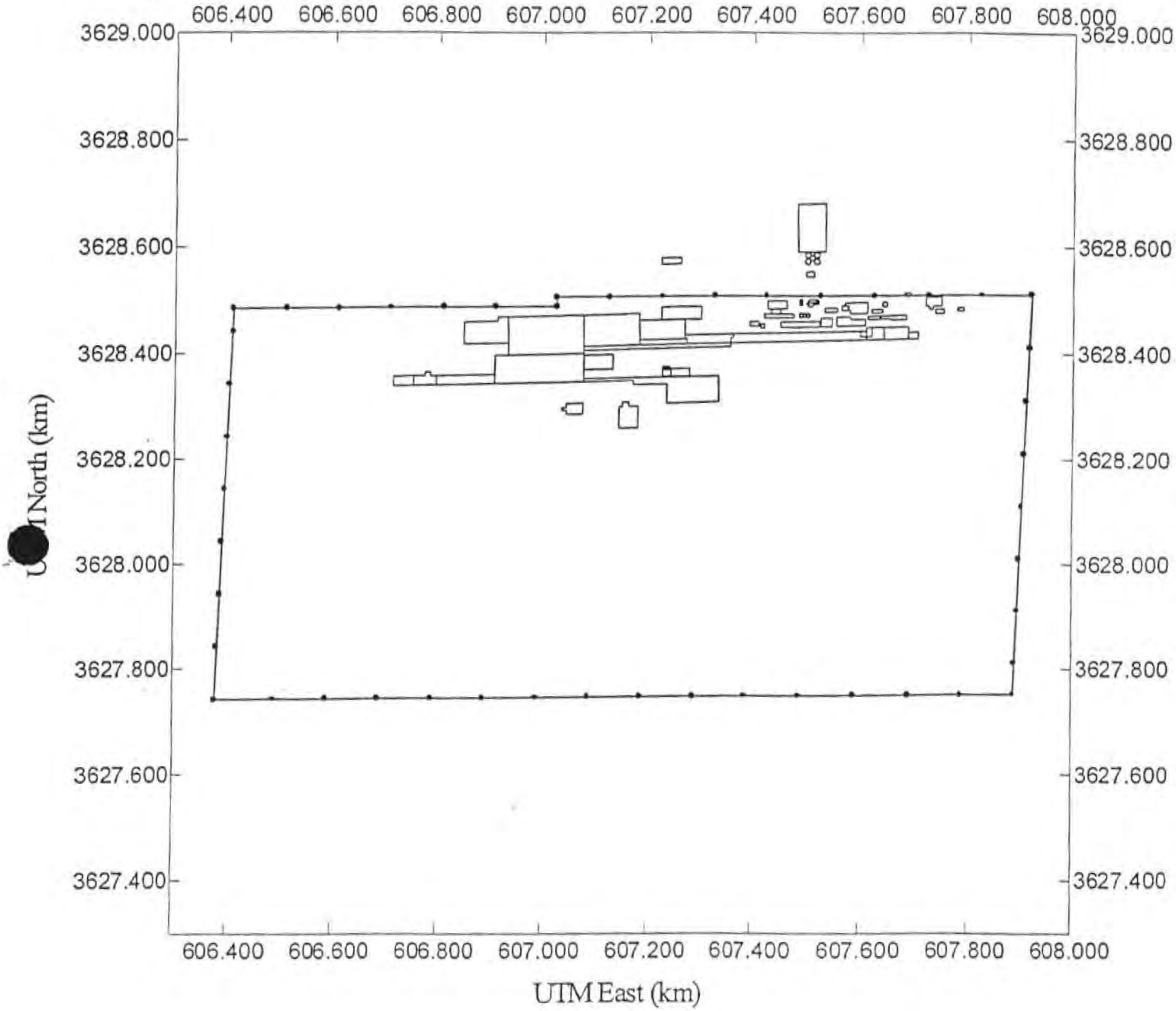


FIGURE 10-2. RECEPTOR LOCATIONS FOR THE FINE GRID.

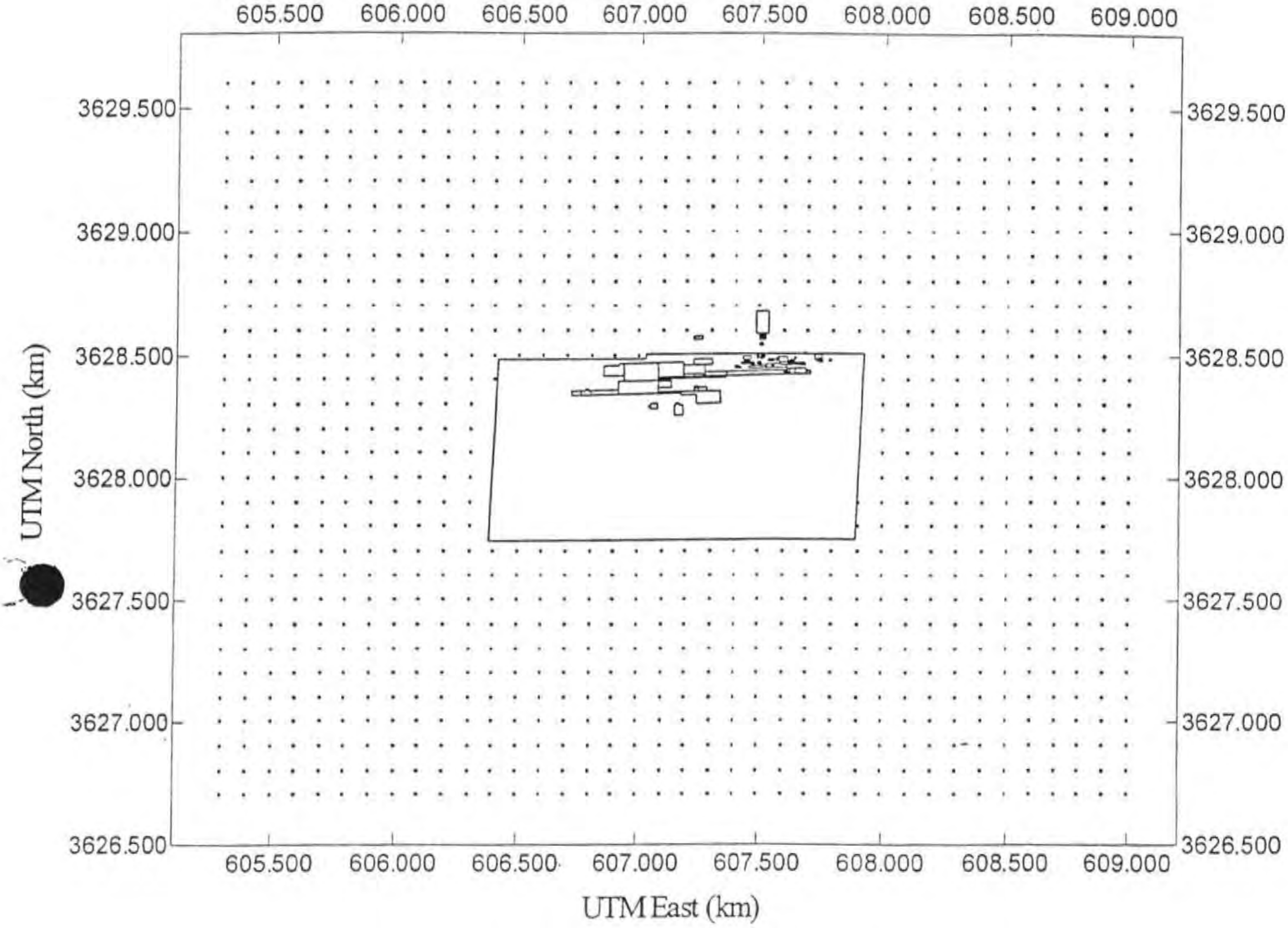


FIGURE 10-3. RECEPTOR LOCATIONS FOR THE MEDIUM GRID.

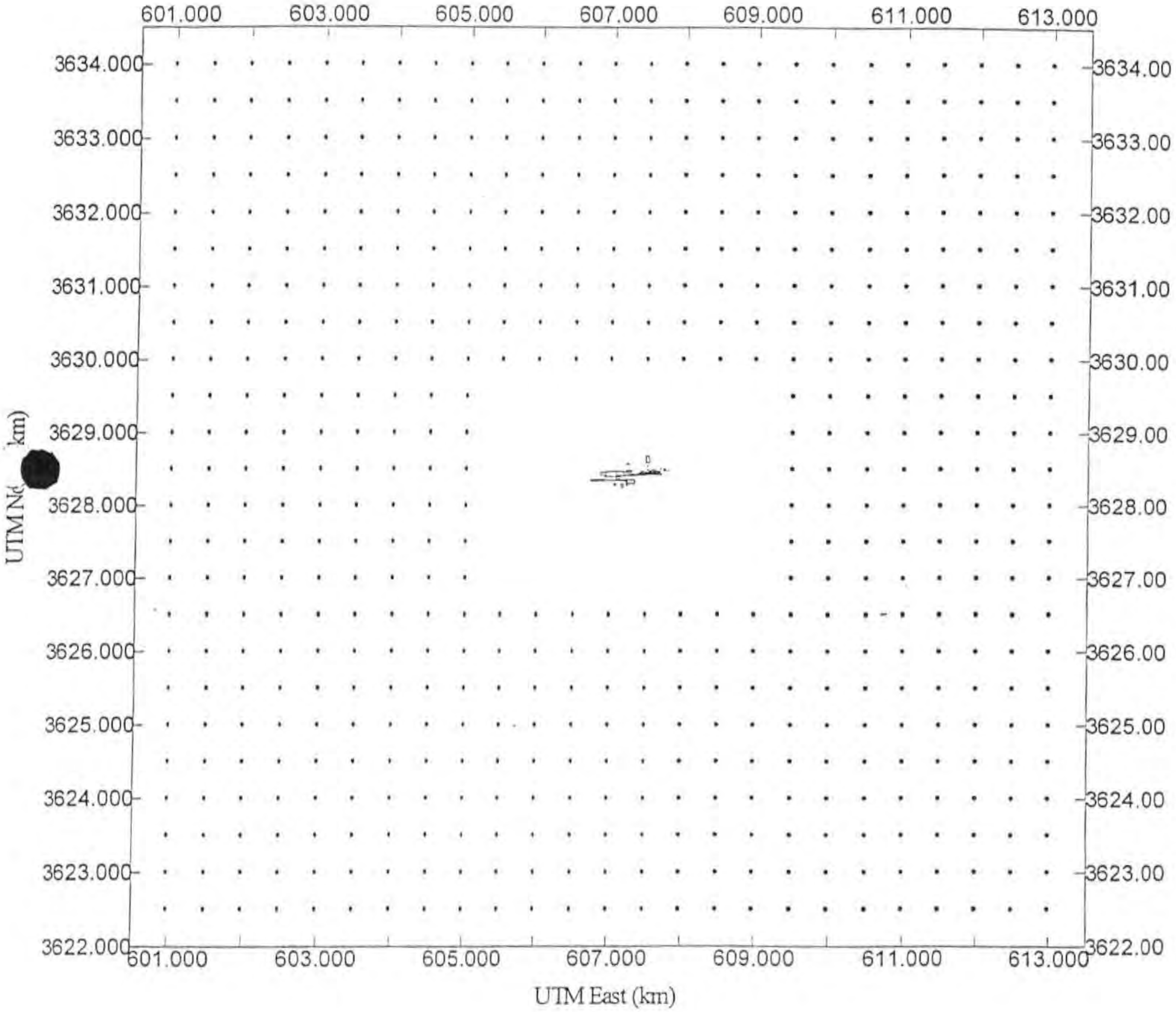
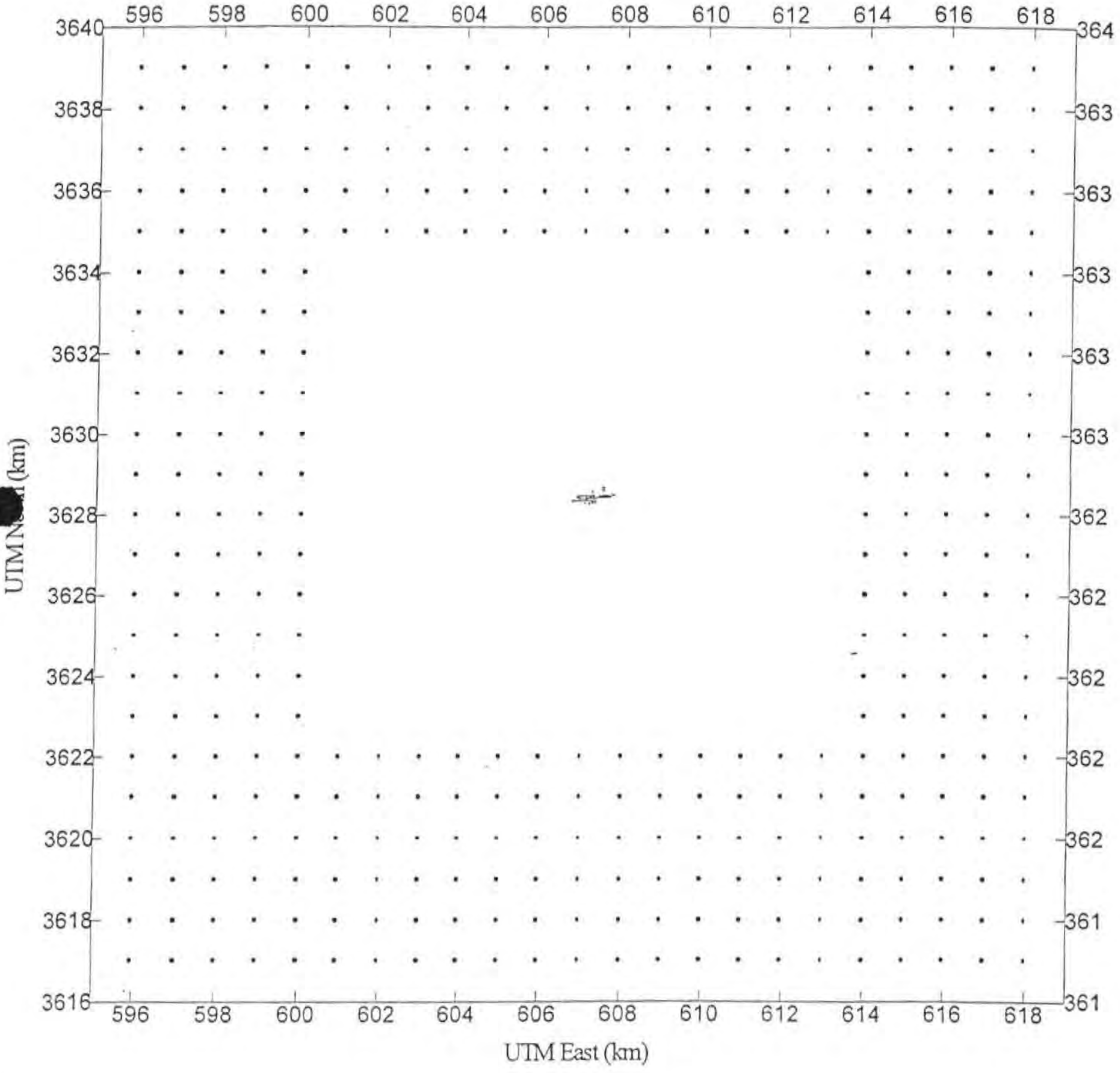


FIGURE 10-4. RECEPTOR LOCATIONS FOR THE COARSE GRID.



11. METEOROLOGICAL DATA

The U.S. EPA typically recommends a single year of meteorological data for effects evaluation or non-PSD modeling. In this case, the dispersion modeling analysis is performed using 1956 meteorological data based on surface observations taken from the El Centro Naval Auxiliary Air Station (National Weather Service Station [NWS] station number 23199) and upper air measurements from Yuma, Arizona (NWS station number 3145). This station combination has been recommended for modeling in Imperial County by the ICAPCD.

The anemometer height at the El Centro NWS station during the period of interest (1956) is assumed to be 10 feet above ground level.

12.1 IMPACT ANALYSIS

Table 12-2 lists the maximum off-property, ground-level concentrations of the pollutants modeled in the impact analysis (NO_2 and CO) for the fenceline, fine, medium, and coarse receptor grids. These impacts occur as a result of emissions from post-modification, proposed and removal of existing line #2 sources from the Southwest Plant. All concentrations are compared against the corresponding modeling impact levels (CAAQS and NAAQS).

Please note that a NO_X-to-NO_2 conversion ratio of 100% is conservatively assumed in the impact analysis.

Table 12-1 shows that all maximum modeled concentrations of criteria pollutants (NO_2 and CO) are below the corresponding modeling levels; therefore, no adverse impacts from these emissions are expected to occur and no further modeling is required to demonstrate compliance with the CAAQS and NAAQS. Concentration plots showing the maximum concentrations for each criteria pollutant and averaging period are provided for reference in Appendix B.

TABLE 12-1. MAXIMUM MODELED CONCENTRATIONS AS DETERMINED IN THE IMPACT ANALYSIS.

Pollutant	Averaging Period	Receptor Grid	UTM East (km)	UTM North (km)	Maximum Modeled Concentration ($\mu g/m^3$)	Maximum Modeled Concentration w/Background ($\mu g/m^3$)	Modeling Level CAAQS ($\mu g/m^3$)	Modeling Level NAAQS ($\mu g/m^3$)
NO_2	1-Hour	Fenceline	606.910	3,628.488	268.222	**341.522**	470	--
		Fine	607.000	3,628.500	212.635	**285.935**	470	--
		Medium	606.000	3,630.500	13.727	**87.027**	470	--
		Coarse	606.000	3,622.000	6.025	**79.325**	470	--
NO_2	Annual	Fenceline	606.810	3,628.487	1.580	**7.180**	--	100
		Fine	606.800	3,628.500	1.220	**6.820**	--	100
		Medium	609.500	3,628.000	0.059	**5.659**	--	100
		Coarse	615.000	3,627.000	0.037	**5.637**	--	100
CO	1-Hour	Fenceline	606.910	3,628.488	632.663	**632.663**	23,000	40,000
		Fine	607.000	3,628.500	501.547	**501.547**	23,000	40,000
		Medium	606.000	3,630.500	32.377	**32.377**	23,000	40,000
		Coarse	606.000	3,622.000	14.688	**14.688**	23,000	40,000
CO	8-Hour	Fenceline	606.910	3,628.488	164.644	**164.644**	10,000	10,000
		Fine	606.800	3,628.500	104.035	**104.035**	10,000	10,000
		Medium	608.000	3,626.500	9.547	**9.547**	10,000	10,000
		Coarse	602.000	3,635.000	2.295	**2.295**	10,000	10,000

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APPENDIX C-2:
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Table AQ1 (January 2019)
USG Quarry Proposed Operations
Onsite Quarry Mobile Equipment Emissions (Typical)

				Equation Variables		Emissions							
	Operation	Emission Factor	Units	1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOx lbs/day	SOx lbs/day	CO2 lbs/day	CH4 lbs/day
Equipment Exhaust Emissions				Equipment #	Operating Hrs								
PM-10	Bulldozer -Cat D10-766 hp-T	0.020	lbs/hr	1	8	0.16	0.15						
PM-2.5	Loader-Cat 988 530hp-T4	0.006	lbs/hr	2	16	0.19	0.18						
	Loaders-Cat988-700hp-T3	0.010	lbs/hr	1	16	0.16	0.15						
	Water & Vac trks (Compos)	0.036	lbs/hr	2	4	0.29	0.26						
	Grader-Cat 12M (186 HP)- T4	0.003	lbs/hr	1	1	0.00	0.00						
	Trucks-Hit EH1100-760hp-T2	0.100	lbs/hr	1	14	1.40	1.29						
	Trucks Kom605-760hp-T4	0.008	lbs/hr	3	14	0.34	0.31						
	Drill Rig - HP 450- T3	0.080	lbs/hr	1	10	0.80	0.74						
	Excav-KOM 390-271hp- T4i	0.003	lbs/mi	1	14	0.04	0.04						
ROG	Bulldozer -Cat D10-766 hp-T	0.090	lbs/hr	1	8			0.72					
	Loader-Cat 988 530hp-T4	0.025	lbs/hr	2	16			0.80					
	Loaders-Cat988-700hp-T3	0.070	lbs/hr	1	16			1.12					
	Water & Vac trks (Compos)	0.161	lbs/hr	2	4			1.29					
	Grader-Cat 12M (186 HP)- T4	0.024	lbs/hr	1	1			0.02					
	Trucks-Hit EH1100-760hp-T2	0.040	lbs/hr	1	14			0.56					
	Trucks Kom605-760hp-T4	0.030	lbs/hr	3	14			1.26					
	Drill Rig - HP 450- T3	0.060	lbs/hr	1	10			0.60					
	Excav-KOM 390-271hp- T4i	0.030	lbs/mi	1	14			0.42					
CO	Bulldozer -Cat D10-766 hp-T	1.750	lbs/hr	1	8				14.00				
	Loader-Cat 988 530hp-T4	1.090	lbs/hr	2	16				34.88				
	Loaders-Cat988-700hp-T3	1.680	lbs/hr	1	16				26.88				
	Water & Vac trks (Compos)	0.563	lbs/hr	2	4				4.50				
	Grader-Cat 12M (186 HP)- T4	0.050	lbs/hr	1	1				0.05				
	Trucks-Hit EH1100-760hp-T2	3.070	lbs/hr	1	14				42.98				
	Trucks Kom605-760hp-T4	1.330	lbs/hr	3	14				55.86				
	Drill Rig - HP 450- T3	1.500	lbs/hr	1	10				15.00				
	Excav-KOM 390-271hp- T4i	0.350	lbs/mi	1	14				4.90				
NOX	Bulldozer -Cat D10-766 hp-T	1.750	lbs/hr	1	8					14.00			
	Loader-Cat 988 530hp-T4	0.140	lbs/hr	2	16					4.48			
	Loaders-Cat988-700hp-T4	1.460	lbs/hr	1	16					23.36			
	Water & Vac trks (Compos)	1.053	lbs/hr	2	4					8.42			
	Grader-Cat 12M (186 HP)- T4	0.370	lbs/hr	1	1					0.37			
	Trucks-Hit EH1100-760hp-T2	1.660	lbs/hr	1	14					23.24			
	Trucks Kom605-760hp-T4	0.150	lbs/hr	3	14					6.30			
	Drill Rig - HP 450- T3	1.300	lbs/hr	1	10					13.00			
	Excav-KOM 390-271hp- T4i	0.600	lbs/mi	1	14					8.40			
SOX	Bulldozer -Cat D10-766 hp-T	0.005	lbs/hr	1	8						0.04		
	Loader-Cat 988 530hp-T4	0.002	lbs/hr	2	16						0.07		
	Loaders-Cat988-700hp-T4	0.005	lbs/hr	1	16						0.08		
	Water & Vac trks (Compos)	0.003	lbs/hr	2	4						0.02		
	Grader-Cat 12M (186 HP)- T4	0.001	lbs/hr	1	1						0.00		
	Trucks-Hit EH1100-760hp-T2	0.004	lbs/hr	1	14						0.06		
	Trucks Kom605-760hp-T4	0.004	lbs/hr	3	14						0.17		
	Drill Rig - HP 450- T3	0.003	lbs/hr	1	10						0.03		
	Excav-KOM 390-271hp- T4i	0.002	lbs/mi	1	14						0.03		
CO2	Bulldozer -Cat D10-766 hp-T	465.0	lbs/hr	1	8							3,720.0	
	Loader-Cat 988 530hp-T4	237.0	lbs/hr	2	16							7,584.0	
	Loaders-Cat988-700hp-T4	460.0	lbs/hr	1	16							7,360.0	
	Water & Vac trks (Compos)	260.0	lbs/hr	2	4							2,080.0	
	Grader-Cat 12M (186 HP)- T4	442.0	lbs/hr	1	1							442.0	
	Trucks-Hit EH1100-760hp-T2	442.0	lbs/hr	1	14							6,188.0	
	Trucks Kom605-760hp-T4	442.0	lbs/hr	3	14							18,564.0	
	Drill Rig - HP 450- T3	188.0	lbs/hr	1	10							1,880.0	
	Excav-KOM 390-271hp- T4i	159.0	lbs/mi	1	14							2,226.0	
CH4	Bulldozer -Cat D10-766 hp-T	0.032	lbs/hr	1	8								0.254
	Loader-Cat 988 530hp-T4	0.013	lbs/hr	2	16								0.416
	Loaders-Cat988-700hp-T4	0.026	lbs/hr	1	16								0.416
	Water & Vac trks (Compos)	0.015	lbs/hr	2	4								0.117
	Grader-Cat 12M (186 HP)- T4	0.024	lbs/hr	1	1								0.024
	Trucks-Hit EH1100-760hp-T2	0.024	lbs/hr	1	14								0.336
	Trucks Kom605-760hp-T4	0.024	lbs/hr	3	14								1.008
	Drill Rig - HP 450- T3	0.005	lbs/hr	1	10								0.049
	Excav-KOM 390-271hp- T4i	0.008	lbs/mi	1	14								0.118
					Total Daily	3.38	3.11	6.79	199.05	101.57	0.50	50,044	2.74
				Tons&GHG Annual (MTCO2e)		0.62	0.57	1.24	36.33	18.54	0.09	8,303	9.54

Operations 365 days/year.
Equipment List from USG list submitted for DOORS program.

PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)
Emission Sources: Off-Road Diesel Tier Emission Factors; SCAQMD Offroad Mobile Source Emissions' Factors.
MTCO2e = metric tons of CO2 equivalent

Table AQ2 (January 2019)
USG Pipeline Construction Activities
Onsite Mobile Construction Equipment Emissions (Typical)

				Equation Variables		Emissions							
Operation		Emission Factor	Units	1	2	PM-10 lbs/day	PM-2.5 lbs/day	ROC lbs/day	CO lbs/day	NOx lbs/day	SOx lbs/day	CO2 lbs/day	CH4 lbs/day
Equipment Exhaust Emissions				Equipment #	Operating Hrs								
PM-10	Bulldozer	0.046	lbs/hr	1	9	0.41	0.38						
PM-2.5	Backhoes	0.007	lbs/hr	2	9	0.13	0.12						
	Water Truck	0.058	lbs/hr	1	2	0.12	0.11						
	Grader	0.036	lbs/hr	1	4	0.14	0.13						
	Trucks	0.058	lbs/hr	5	4	1.16	1.07						
	Excavator/trencher	0.025	lbs/hr	1	9	0.22	0.21						
			lbs/hr			0.00	0.00						
			lbs/hr			0.00	0.00						
			lbs/mi			0.00	0.00						
ROG	Bulldozer	0.119	lbs/hr	1	9			1.07					
	Backhoes	0.025	lbs/hr	2	9			0.46					
	Water Truck	0.163	lbs/hr	2	4			1.30					
	Grader	0.105	lbs/hr	1	4			0.42					
	Trucks	0.016	lbs/hr	5	4			0.33					
	Excavator/trencher	0.085	lbs/hr	1	9			0.76					
			lbs/hr					0.00					
			lbs/hr					0.00					
			lbs/mi					0.00					
CO	Bulldozer	0.539	lbs/hr	1	9				4.85				
	Backhoes	0.215	lbs/hr	2	9				3.86				
	Water Truck	0.676	lbs/hr	2	4				5.41				
	Grader	0.581	lbs/hr	1	4				2.32				
	Trucks	0.676	lbs/hr	5	4				13.52				
	Excavator/trencher	0.516	lbs/hr	1	9				4.64				
			lbs/hr						0.00				
			lbs/hr						0.00				
			lbs/mi						0.00				
NOX	Bulldozer	0.796	lbs/hr	1	9					7.16			
	Backhoes	0.180	lbs/hr	2	9					3.24			
	Water Truck	1.229	lbs/hr	2	4					9.83			
	Grader	0.722	lbs/hr	1	4					2.89			
	Trucks	1.229	lbs/hr	5	4					24.59			
	Excavator/trencher	0.518	lbs/hr	1	9					4.66			
			lbs/hr							0.00			
			lbs/hr							0.00			
			lbs/mi							0.00			
SOX	Bulldozer	0.001	lbs/hr	1	9						0.01		
	Backhoes	0.000	lbs/hr	2	8						0.01		
	Water Truck		lbs/hr	2	4						0.00		
	Grader	0.002	lbs/hr	1	4						0.01		
	Trucks		lbs/hr	5	4						0.00		
	Excavator/trencher	0.001	lbs/hr	1	9						0.01		
			lbs/hr								0.00		
			lbs/hr								0.00		
			lbs/mi								0.00		
CO2	Bulldozer	114.0	lbs/hr	1	9							1,026.0	
	Backhoes	30.0	lbs/hr	2	9							540.0	
	Water Truck	151.0	lbs/hr	2	4							1,208.0	
	Grader	133.0	lbs/hr	1	4							532.0	
	Trucks	151.0	lbs/hr	2	4							1,208.0	
	Excavator/trencher	120.0	lbs/hr	1	9							1,080.0	
			lbs/hr									0.0	
			lbs/hr									0.0	
			lbs/mi									0.0	
CH4	Bulldozer	0.011	lbs/hr	1	9								0.096
	Backhoes	0.002	lbs/hr	2	9								0.041
	Water Truck	0.015	lbs/hr	1	2								0.029
	Grader	0.010	lbs/hr	1	4								0.038
	Trucks	0.015	lbs/hr	2	4								0.117
	Excavator/trencher	0.008	lbs/hr	1	9								0.069
			lbs/hr										0.000
			lbs/mi										0.000
					Total Daily lbs	2.18	2.01	4.34	34.62	52.37	0.04	5,594	0.39
	Annual Tons - 50 days of construction (Quarry Line- 3 miles)					0.05	0.05	0.11	0.87	1.31	0.00	127	0.19
	Annual Tons - 75 days of construction (IID water supply line-5.5 miles)					0.08	0.08	0.16	1.30	1.96	0.00	191	0.28
	Annual Tons - 200 days of construction (Ocotillo to Plant line - 8.5 mi; remove/replace)					0.22	0.20	0.43	3.46	5.24	0.00	509	0.75

Fugitive Dust (from Table 3.6-8 (2006 EIR/EIS)

PM10 (tons/year)	PM2.5 (tons/year)
1.64	0.34
2.46	0.51
6.56	0.68

Operations - Days vary per pipeline project alternatives.
50 days of construction (Quarry Line- 3 miles)
75 days of construction (IID water supply line-5.5 miles)
200 days of construction (Ocotillo to Plant line - 8.5 miles; remove and replace)
PM2.5 fraction of PM10 Exhaust is 0.92 (CEIDARS List)
Emission Sources: Off-Road Diesel Tier Emission Factors; SCAQMD Offroad Mobile Source Emissions' Factors.
MTCO2e = metric tons of CO2 equivalent

Sources: USG, 2003; SCAQMD 2018 Off-road Mobile Source Emission Factors; Composite emission rates for 2018
http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors

APPENDIX C-3:
ESTIMATED AIR QUALITY EMISSIONS—VIKING RANCH

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Viking Ranch Restoration Summary Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Viking Ranch Restoration
Lead Agency	Imperial County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.00
Precipitation (days)	6.20
Location	33.32733291356948, -116.35758498754706
County	San Diego
City	Unincorporated
Air District	San Diego County APCD
Air Basin	San Diego
TAZ	6100
EDFZ	12
Electric Utility	San Diego Gas & Electric
Gas Utility	San Diego Gas & Electric

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Recreational	1.00	User Defined Unit	207	0.00	207	—	—	open space

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	NOx	CO	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—
Unmit.	4.49	36.0	35.4	9.41	5.45	7,781
Daily, Winter (Max)	—	—	—	—	—	—
Unmit.	4.49	36.0	35.3	9.41	5.45	7,767
Average Daily (Max)	—	—	—	—	—	—
Unmit.	3.15	24.1	24.7	5.25	3.03	5,318
Annual (Max)	—	—	—	—	—	—
Unmit.	0.57	4.39	4.50	0.96	0.55	880
Exceeds (Daily Max)	—	—	—	—	—	—
Threshold	—	—	—	—	—	—
Unmit.	Yes	Yes	Yes	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—
Threshold	—	—	—	—	—	—
Unmit.	Yes	Yes	Yes	—	—	—
Exceeds (Annual)	—	—	—	—	—	—
Threshold	25.0	25.0	100	27.0	100	—
Unmit.	No	No	No	No	No	—

6. Climate Risk Detailed Report

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

7. Health and Equity Details

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	33.0
Healthy Places Index Score for Project Location (b)	33.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

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APPENDIX D:
BIOLOGICAL RESOURCES REPORTS

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APPENDIX D-1:
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BIOLOGICAL RESOURCES TECHNICAL REPORT
United States Gypsum Company
Expansion and Modernization Project

Prepared for:

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March 2019

BIOLOGICAL RESOURCES TECHNICAL REPORT: United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

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BIOLOGICAL RESOURCES TECHNICAL REPORT:
United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

I. Executive Summary

This Biological Resources Technical Report (BRTR) was prepared under contract to the Lilburn Corporation to support National Environmental Protection Act (NEPA) review of the proposed United States Gypsum (USG) Expansion and Modernization Project. This report describes biological resources present at USG's Plaster City Quarry (quarry) and along two proposed water lines. This report incorporates and updates biological resources described in a Final Environmental Impact Report/ Environmental Impact Statement and attachments, published in 2008, by Imperial County and Bureau of Land Management (CEQA and NEPA lead agencies, respectively).

New biological field surveys were conducted in 2014, 2016, and 2017. This report provides updates mapping of vegetation and habitat; quantifies as well as updated reviews of potential occurrences for special-status species known from the region.

Special-status plants: No state or federally listed threatened or endangered plants, and no BLM-designated Sensitive Plants, have been recorded on the quarry site or pipeline routes. Three special-status plants (California Rare Plant Rank [CRPR] 2B) have been recorded in or around the proposed quarry expansion areas: annual rock-nettle, brown turbans, and narrow-leaf sandpaper-plant. In addition, four plants recognized as "watch-list" species (CRPR 4) have been recorded in or around the quarry area. Potential occurrence for all other special-status plants (not observed during surveys) is summarized in Table 3.

Special-status wildlife: One state and federally listed wildlife species, Peninsular bighorn sheep, occurs in and around the existing and proposed future quarrying areas. In addition, the state and federally listed desert pupfish occurs in the watershed, several miles north of the existing and proposed project facilities. Burrowing owl, a BLM-designated Sensitive Species was observed during Fall of 2014, but no burrowing owls were observed during field surveys conducted during breeding season. Two other BLM Sensitive Species, golden eagle and flat-tailed horned lizard, could occur in or around the project facilities, although they were not observed during field surveys. Other special-status wildlife species observed during field surveys were loggerhead shrike and black-tailed gnatcatcher. Potential occurrence for all other special-status wildlife (not observed during surveys) is summarized in Table 4.

This report briefly summarizes expected project impacts to biological resources, and recommends several mitigation measures to avoid, minimize, or offset those impacts.

II. Project and Property Description

This BRTR describes biological resources at USG's Plaster City Quarry (quarry) and along two proposed water lines to support a Supplemental Environmental Impact Statement (SEIS) in preparation for the USG Quarry Expansion and Modernization Project. The SEIS will supplement a Final Environmental Impact Report / Environmental Impact Statement (EIR/EIS) prepared by the County of Imperial and

Bureau of Land Management in 2008, and subsequently approved by the County. The project is briefly summarized here and shown on Figure 1 (Project Overview); a more complete project description may be found in the 2008 Final EIR/EIS and in Chapter 2 of the SEIS (in preparation). All proposed project activities and facilities would be located in Imperial County, California. The Proposed Action consists of:

- A replacement water line from USG's wells in Ocotillo to the existing Plaster City plant
- A new water line to serve the Plaster City Quarry
- Continuing and expanded quarrying operations at the Plaster City Quarry, including quarry reclamation

Replacement water line. The replacement water line route originates at a well field just south of the Interstate 8 (I-8) freeway in Ocotillo at about 375 feet elevation. It crosses beneath the freeway, and parallels Imperial County Route S80 to the north and east to Plaster City. Along the remainder of its length, the water line is within the existing road right-of-way, on the south side of the road. The eastern five miles of the water line are at the boundary of the BLM Plaster City Open Area for off-highway vehicles (OHVs) (BLM, 1998), and a designated OHV staging area is on the north side of Route S80 west of the Plaster City Plant. The Proposed Action would replace the existing water line by installing a larger line within approximately twenty feet of the existing alignment.

New water line. The proposed new quarry water line would originate at Quarry Well Number 3 and follow an existing narrow-gauge rail line to the quarry itself (Figure 1, Project Overview). The narrow-gauge line is owned and operated by USG to deliver raw materials from the Plaster City Quarry to the Plaster City Plant. The proposed pipeline route is within the narrow-gauge railroad right-of-way, originating at the well site and paralleling the railway to the quarry site. Habitat at the proposed well site and pipeline alignment is relatively stable sandy desert bajada supporting desert shrubland dominated by creosote bush.

Quarry location and operations. The USG Plaster City Quarry is located in the Fish Creek Mountains, about 26 miles northwest of the plant site, on the lower slopes of the Fish Creek Mountains (Figure 1, Project Overview and Figure 2, Plaster City Quarry Vegetation and Landcover). The Proposed Action includes expansion of the quarry areas on a series of mining claims to the south and southeast of the existing quarries. The existing and proposed quarry would be located primarily on private lands, but also would include new disturbance within mining claims on public lands managed by the Bureau of Land Management (BLM). The total acreage of USG's claims on public lands is 73.2 acres, and planned disturbance would be limited to 18.1 acres within them.

The area proposed for continuing and future quarrying is on middle and lower slopes and a broad alluvial wash. Elevation ranges from about 300 feet in the northwest corner to 1,041 feet at a small peak near the eastern boundary of the study area. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by pygmy cedar (*Peucephyllum schottii*) on the gypsum and creosote bush (*Larrea tridentata*) on the metamorphic sedimentary material. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. Alluvial soils throughout the wash area support desert shrublands composed primarily of creosote bush, with stands of smoke tree (*Psorothamnus spinosus*) and catclaw acacia (*Senegalia* [*Acacia*] *greggii*) in the main channels. Quarrying activities would take place on the slopes and on the alluvial wash (to reach below-grade gypsum deposits, as shown in EIS Figure 2-10).

The primary wash and several of its tributaries are shown as ephemeral streams on the U.S. Geological Survey (USGS) topographic maps. Runoff from the project site drains to the north into Fish Creek Wash and then to the Salton Sea, an intrastate lake.

III. Methods

Justin Wood of Aspen Environmental Group reviewed available literature to identify special-status plants, wildlife, or plant communities known from the project vicinity. We reviewed the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2018) for USGS 7.5-minute topographic quadrangles (quads) on which the Plaster City plant, rail line, water line, or quarry expansion areas occur (Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, and Coyote Wells) and several adjacent quads (Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge).

We also reviewed the California Native Plant Society (CNPS) *On-line Electronic Inventory* (CNPS 2018, for the quads listed above), and searched the Consortium of California Herbaria (2018) for records of special-status plants known from the area. Several special-status species occur only in specialized native habitats that are absent from the project site or occur at higher elevations that were included during the CNDDB search. These plants and animals are listed in Attachment 5, but are not addressed further in this report. All special-status plants and animals known from comparable habitats within the region are identified in Table 3 (plants) and Table 4 (wildlife), which summarize their habitat, distribution, conservation status, and probability of occurrence on the Project site.

This report incorporates the results of biological field surveys by White and Leatherman BioServices conducted in 2002 to support the previous CEQA and NEPA analysis, as follows: Scott White and Brian Leatherman drove the narrow-gauge rail line alignment on 23 April 2002; White drove the length of the replacement water line of 19 June 2002; White and Leatherman drove the replacement water line on 24 July 2002; White and Leatherman surveyed uplands within the quarry expansion area on 23 April 2002; Leatherman conducted surveys on the quarry from 27 to 29 March 2002.

Biological surveys to support the current NEPA review were conducted during October of 2014, April and October of 2016, and March and April of 2017 by Justin Wood (JW), Brian Leatherman (BL), Sandy Leatherman (SL), Greg Stratton (GS), Chez Brungraber (CB), and Michelle Cloud-Hughes (MC) as shown in Table 1. Members of the survey team have extensive experience with the special-status plants from the region, including the State and Federally listed species. They also have experience of the special-status wildlife species of the area.

Table 1. Survey Personnel and Dates

Personnel	Survey Dates	Area Surveyed
JW and SL	October 28-29, 2014	Quarry
JW, BL, GS, CB, and MC	April 4-5, 2016	Quarry
JW, SL, GS, CB, and MC	April 6-7, 2016	Quarry and proposed new pipeline
JW, SL, GS, and CB	April 11-13, 2016	Quarry and proposed replacement pipeline
JW, SL, GS, and MC	October 26-28, 2016	Quarry, both proposed pipelines
SL and CB	March 30-31, 2017	Both proposed pipelines

Surveys were conducted throughout the survey area which included all phases of the planned quarry expansion, the proposed new pipeline alignment, new well location, and existing Ocotillo water line alignment (proposed replacement pipeline). Surveys were conducted using the complete coverage method as described in the Survey Protocols for Special Status Plants which has been developed by BLM-California (BLM, 2009). This method was developed to survey for special status plants on projects that must comply with BLM policy, the National Environmental Policy Act (NEPA), and the Endangered

Species Act (ESA). The spacing between transects was typically ten meters but increased as the topography changed making ten meters spacing impracticable. The ten-meter spacing was intended to allow surveyors to locate small non-descript special-status annual plants. During the survey all special-status plants with a California Rare Plant Rank (CRPR) of 1 or 2 were recorded with a GPS unit. Following the surveys, a CNDDB form was completed for all occurrences separated by more than 0.25 miles.

In conformance with California Department of Fish and Wildlife guidelines (CDFG, 2009), botanical surveys were (a) conducted during flowering seasons for the special-status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the sites, and (e) well documented, by this report, photos that will be uploaded to CalPhotos (BSCIT, 2018), and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden and other herbaria. Documenting the flora with photos and vouchered specimens allows others to verify the identifications of species found within the survey area and can also be used by researchers and scientists to determine what plants have been found in the survey area.

During the field surveys, all plant and wildlife species noted were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations in Baldwin et al. (2012), the Jepson eFlora database of California plants (Jepson Flora Project, 2018), and other regional references. All plant species observed during the surveys are listed in Attachment 4. All special-status plant locations within or immediately adjacent to the survey area will be reported to the CNDDB.

During the surveys Wood mapped vegetation within the Project area by drawing vegetation transitions on aerial images. These field maps were then digitizing into GIS shapefiles using ArcGIS (version 10.4) and one-foot pixel aerial imagery on a 22" diagonal flat screen monitor at the office. Vegetation was named using the names and descriptions in *A Manual of California Vegetation* (Sawyer et al 2009), when possible. The smallest mapping unit mapped was approximately 0.10 acres and most mapped vegetation boundaries are accurate to within approximately 10 feet. The small scale PDF vegetation map provided with this report was generated from ArcGIS shapefiles; the shapefiles were used to calculate areas of each vegetation type and may be viewed at larger scale for management or analysis purposes, if needed. Any vegetation map is subject to imprecision for several reasons:

- Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
- Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.
- Vegetation types tend to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

IV. Results

IV. A. Vegetation

The quarry area is characterized by broad sandy wash and adjacent upland slopes and mountains. The wash slopes gently toward the northwest and is fed by several canyons in the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest). The wash is vegetated by several types of wash shrubland and woodland as described below. The uplands are also vegetated by a variety of shrubland types. A total of seven vegetation types were mapped within the Project site. Other land cover types including sparsely vegetated sandy wash and existing development were also mapped within the Project area. Vegetation and cover types within the Project area are described in the following paragraphs and mapped on Figure 2 (Plaster City Quarry Vegetation and Landcover). Acreages of each vegetation and cover type within the Project site are shown in Table 2.

Creosote bush scrub (*Larrea tridentata* Shrubland Alliance). Creosote bush scrub is an upland vegetation type that is characterized by creosote bush (*Larrea tridentata*) which is the dominant shrub. Other species such as dyebush (*Psorothamnus emoryi*), desert straw (*Stephanomeria pauciflora*), and indigo bush (Psoro-Thamnus schottii) are also present but in much lower numbers. It is most common in the uplands along the northwest portion of the Project site.

Creosote bush–white bursage scrub (*Larrea tridentata–Ambrosia dumosa* Shrubland Alliance). Creosote bush–white bursage scrub is an upland vegetation that is characterized by creosote bush and white bursage (*Ambrosia dumosa*) which co-dominate these areas. Several other species are present in these areas including (*Condea emoryi*), desert straw, ocotillo (*Foquieria splendens*), and three species of cholla (*Cylindropuntia* spp.). Scattered catclaw (*Senegalia greggii*) are also present in some of the smaller upland swales that originate in these areas and eventually change to catclaw acacia thorn scrub further downstream.

Catclaw acacia thorn scrub (*Acacia greggii* Shrubland Alliance). Catclaw acacia thorn scrub is a wash vegetation that is dominated by catclaw. Other species such as desert lavender, smoke tree (*Psorothamnus spinosus*), cheesebrush (*Ambrosia salsola*), and sweetbush (*Bebbia juncea*). It is most common in the upper washes and in more isolated portions of the main wash that are slightly protected from scouring flows.

Smoke tree woodland (*Psorothamnus spinosus* Woodland Alliance). Smoke tree woodland is a wash vegetation that is dominated by smoke tree. Other species such as desert lavender, indigo bush, catclaw, desert willow (*Chilopsis linearis*), and cheesebrush (*Ambrosia salsola*) are also present. Several desert ironwood (*Olneya tesota*) were also present within the smoke tree woodlands along the Ocotillo pipeline alignment. It is most common in the large wash that flows through the lower elevations within the Project site. It grows in the most active portion of the wash that is frequently scoured. Some areas mapped as smoke tree woodland have very little vegetative cover, primarily because of scouring floods that hit the area in 2014. Many of the dominate trees and shrubs survived but were buried or knocked over and are continuing to recover. Smoke tree woodland is ranked by CDFW as a sensitive natural community (CDFW 2010).

Desert fir scrub (*Peucephyllum schottii* Shrubland Alliance). Desert fir scrub is an upland vegetation type that grows on the gypsum outcrops within the Project site. It is dominated by desert fir (*Peucephyllum schottii*) with other species such as flat-topped buckwheat (*Eriogonum plumatella*), and creosote bush also present but in much lower numbers. The areas mapped as this vegetation type do not match any of the vegetation types named or described in *A Manual of California Vegetation* (Sawyer et al. 2009). Therefore, we have named it to best match the naming convention used in Sawyer et al (2009). It is a very sparse vegetation type that is made up of three species including desert fir,

Allscale scrub (*Atriplex polycarpa* Shrubland Alliance). Allscale scrub is a dominated by allscale (*Atriplex polycarpa*) and is present along the Ocotillo pipeline alignment. It grows on fine sandy soils and old playa-like habitats near the community of Ocotillo. Other species such as cheesebrush, dyebush, creosote bush, white bursage, and big galleta (*Hilaria rigida*). Fine wind-blown sands are present at several areas along the Ocotillo pipeline.

Tamarisk thickets (*Tamarix* spp. Shrubland Semi-Natural Alliance). Tamarisk thickets was used to map one patch of vegetation dominated by saltcedar (*Tamarix ramosissima*) and athel tamarisk (*Tamarix aphylla*). Tamarisk thickets are present in a single location within the Project area where flood waters in 2014 ponded and allowed these species to flourish.

Sparsely vegetated sandy wash. Sparsely vegetated sandy washes are present within the quarry, the northern pipeline alignments and along the Ocotillo pipeline alignment. It is used to map areas that are largely unvegetated washes with scattered shrubs such as sweetbush and cheesebrush. Seedling trees such as smoke tree and desert ironwood may be present but in very low numbers. These washes have a high abundance of spring annuals.

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	**Creosote bush scrub**	**Creosote bush – white bursage scrub**	**Catclaw acacia thorn scrub**	**Desert fir scrub**	**Sparsely vegetated sandy wash**	**Smoketree Woodland**	**Tamarisk Thickets**	**Disturbed/Developed**
Existing Phase 1A	0	0	0	2.3	0	0	0	161.4
Existing Quarry 1B	0	0	0	4.1	0	0	0	146.0
Existing Phase S1	2.6	0	0	6.9	0	0	0	22.5
Existing Phase S2	0.8	0	0	16.9	0	0	0	6.7
Existing Phase S3	2.0	0	0	15.4	0	0	0	1.6
Existing Shoveler Haul Rd	0	0	0	0	0	0	0	3.0
Phase 2	28.2	1.4	17.5	4.7	12.7	3.2	0	20.2
Phase 2p	0	1.8	3.0	0	0.6	0	0	0
Phase 3	7.9	0	15.7	0	3.9	0.6	0.4	7.9
Phase 3p	8.8	0	0	0	1.0	1.1	0	0
Phase 4	0	0	9.4	0.9	7.2	12.8	0.05	16.2
Phase 5	0	0	10.4	0	6.7	4.5	0	9.4
Phase 6	18.6	13.1	1.8	32.6	2.7	0	0	2.4
Phase 6Bp	4.3	0	0	42.9	0	0	0	0.02
Phase 6 Haul Rd	3.3	0	0	0.1	0	0	0	0.2
Phase 7	2.8	25.0	11.3	46.1	2.7	0	0	3.6
Phase 7Bp	1.8	0	0	30.5	0	0	0	0.05
Phase 7 Haul Rd	1.7	0	0	0	0	0	0	0
Phase 8	1.9	70.4	8.0	30.5	2.8	0	0	2.8
Phase 8p	0	4.6	2.0	0	0	0	0	0.2

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	**Creosote bush scrub**	**Creosote bush – white bursage scrub**	**Catclaw acacia thorn scrub**	**Desert fir scrub**	**Sparsely vegetated sandy wash**	**Smoketree Woodland**	**Tamarisk Thickets**	**Disturbed/Developed**
Phase 9	0	15.6	1.5	36.1	1.0	0	0	0.1
Phase 10	0	0	8.2	0	0.6	0.3	0	4.2
Phase 10p	0	0	19.6	0	0.4	14.2	0	0.3
Mill site claims (multiple)	0.3	10.5	3.1	0	2.3	1.5	0	1.0
Processing Area	0	0	0	1.3	0	0	0	37.8
Total	85.0	142.4	111.5	271.3	44.6	38.2	0.45	447.6

Note that acreage total (1,141) varies slightly from Plan of Operations (1,145) due to rounding error and minor digitizing discrepancies.

Existing development (quarry, roads, railway, and other infrastructure). This cover type was used to map areas that are active quarry, roads (paved and unpaved), railroad, and other developed areas. These areas have a very limited amount of vegetation.

IV. B. Wildlife Habitat

The term *habitat* refers to the environment and ecological conditions where a species is found. Wildlife habitat is often described in terms of vegetation, though a more thorough explanation encompasses further detail such as availability or proximity to water, suitable nesting or denning sites, shade, foraging perches, cover sites to escape from predators, soils that are suitable for burrowing or hiding, proximity of noise and disturbance, and other factors that are unique to each species. For many wildlife species, vegetation reflects important components of habitat, including regional climate, physical structure, and biological productivity and food resources. Thus, the vegetation descriptions in Section IV.A. are useful overarching descriptors for wildlife habitat. The predominant vegetation types in the project area correspond to habitats identified as desert wash (described in Section IV.A., above, as smoke tree woodland and catclaw acacia thorn scrub), desert scrub (described above as creosote bush scrub and creosote bush–white bursage scrub) and alkali desert scrub (described above as allscale scrub) as classified by the California Wildlife Habitat Relationships (Mayer and Laudenslayer, 1988).

Where additional details of habitat suitability are necessary to this analysis, they are provided in the discussion of special-status wildlife species. Examples include the availability of steep slopes and water sources for Peninsular bighorn sheep. The following paragraphs summarize wildlife habitat and list a few of the wildlife species that either have been observed or are expected to occur in the habitat types found within the project site and surrounding area.

Plaster City Quarry. The existing quarry and proposed quarry expansion area is in an elongated valley along an unnamed wash and on the lower hillsides of the northeastern Fish Creek Mountains. The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. The planned quarry expansion area is on middle and lower slopes and the adjacent part of the alluvial wash. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by creosote bush on the igneous material and by pygmy cedar on the gypsum. The mountainsides are very steep (average slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus. Exposed ridgetops have thin soil overlying bedrock.

The alluvial wash slopes gently (about 2 percent), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and smaller tributaries, and by sheet flow. Surface runoff drains to the north across the alluvial fan into Fish Creek Wash, through a system of braided tributaries across the bajada to San Felipe Creek and San Sebastian Marsh, and then to the Salton Sea. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. In some areas, the channels are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the 3- to 10-inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. These soils present a poor substrate for burrowing wildlife. The alluvial soils support desert shrublands composed primarily of creosote bush, with stands of smoke tree and catclaw acacia in the main channels.

Gypsum deposits are found on a north-south trend for about 4.5 miles along the northern portion of the Fish Creek Mountains. Contiguous gypsum outcrops range in elevation from 920 feet above mean sea level (MSL) at the southernmost limit of the deposit to about 325 feet MSL at the northernmost exposures. Outlying deposits of gypsum occur east of the main deposit at elevations of 700 to 1,000 feet MSL.

The quarry and adjacent mountains evidently have no permanent or long-lasting seasonal water sources (based on field observations and absence of mapped springs or perennial streams on USGS topographic maps). However, there is a series of natural rock tinajas[1] located about 1.8 miles southeast of the quarry area. The tinajas have been reported as holding water for much of the year, although a volunteer checked the site in November 2017 and found it to be dry. Several additional water sources are located west of the quarry area, within Anza Borrego Desert State Park. These tinajas appear to supply a dependable water source throughout much of the year for wildlife.

A few of the characteristic wildlife species observed in the quarry expansion area are: desert horned lizard (*Phrynosoma platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*), desert iguana (*Dipsosaurus dorsalis*), mourning dove (*Zenaida macroura*), Costa's hummingbird (*Calypte costae*), verdin (*Auriparus flavipes*), common raven (*Corvus corax*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*) and desert woodrat (*Neotoma lepida*). A full list of wildlife species observed at the quarry expansion area is included in Attachment 4.

New water line. The proposed new water line route crosses open desert shrubland on the alluvial slope and immediately adjacent toeslopes northward from the existing quarry, and along the desert bajada to the proposed well site. Soils are generally a mix of rocky coarse-textured alluvium overlain in some areas by windblown sand. The water line route is expected to support common desert wildlife species such as

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[1] A tinaja is a natural cistern-like basin which fills during rainstorms and retains water for an extended period. They are often created by erosional processes in intermittent stream channels, and can serve as water sources for wildlife in otherwise dry landscapes.

those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands.

Replacement water line. The replacement water line route crosses the desert floor within open desert shrublands and, often, barren areas along roadways. The route is expected to support common desert wildlife species such as those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands, and opportunistic wildlife species commonly seen in disturbed, ruderal, and non-vegetated areas. Examples include common ravens which frequently perch or nest near roadways and feed opportunistically on road-killed animals. Coyotes may also take advantage of these habitats.

Wildlife Movement. In many regions, land development and linear structures such as roadways, railroads, and canals have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations become locally extinct when their habitat is fragmented by urban development. The Quarry site is in an area that has not been significantly fragmented. Much of the surrounding land is either public open space managed by the BLM or California State Parks, or privately owned undeveloped land. Adequate habitat is available for wildlife movement throughout the general area, especially along ridgelines to the northeast and southwest and in large open areas to the south. In the immediate area, no true barriers to wildlife movement exist, but several man-made deterrents to wildlife movement include active mining and associated facilities, access roads and haul roads. The two pipeline routes are adjacent to existing linear facilities which also may deter wildlife movement to some extent.

IV. C. Climate

Average rainfall in Borrego Springs, approximately 18 miles northwest of the Project area is 5.32 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year (July-June) in Borrego Springs was 2.18 inches, approximately 41% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year In Borrego Springs was 4.43 inches, approximately 83% of the average (U.S. Climate Data 2018). Average rainfall in El Centro, approximately 17 miles east of the existing pipeline is 2.87 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year in El Centro was 1.89 inches, approximately 66% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year was 2.72 inches, approximately 94% of the average (U.S. Climate Data 2018).

IV. D. Special-Status Species

Plants or wildlife may be ranked as special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Certain species have been listed as threatened or endangered under state or federal Endangered Species Acts. Others have not been listed, but declining populations or habitat availability cause concern for their long-term viability. These appear on lists compiled by resource agencies or private conservation organizations. In this report, "special-status species" is used to include all plants and animals listed as threatened or endangered, recognized by the BLM sensitive, or identified by the California Department of Fish and Wildlife. Table 3 represents all special-status species and their potential to occur on the Project site.

IV. D. 1. Special-status Plants

Table 3 and Attachment 5 list the special-status plant species reported within the USGS 7.5-minute quads surrounding the Project area. No State or federally listed plants were observed during the surveys or have potential to be present. Five special-status plant species (Wolf's opuntia, CRPR 4; winged cryptantha, CRPR 4; annual rock nettle, CRPR 2B; Coulter's lyrepod, CRPR 2B; brown turbans, CRPR 4) were observed and are discussed below. Annual rock nettle was observed at locations shown on Figure 3 (Biological Resources). The other species locations were not mapped due to either widespread occurrences (brown turbans) or low-priority conservation status (Wolf's opuntia, winged cryptantha, and Coulter's lyrepod).

Listed Threatened or Endangered Plants

One State and federally listed endangered plant species, San Diego button-celery (*Eryngium aristulatum* var. *parishii*), has been reported from the USGS 7.5-minute quads surrounding the Project area (CDFW, 2018). This plant occurs only in vernal pools in San Diego, Orange, and Riverside counties, inland as far as the In-Ko-Pah Gorge area. It is considered absent from the Project area due to lack of any suitable vernal pool habitat. No other State or federally listed plants have potential to be present or were identified during the literature review.

BLM Sensitive Plants

Six plants recognized by the BLM as sensitive have at least some potential to be present within the Project area. Of these, none were observed and only two species have at least a moderate potential to be present and are discussed below (text continues following the tables).

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Abronia villosa var. *aurita* Chaparral sand verbena	Annual or perennial herb; sand, about 250–5300 ft. elev.; San Jacinto Mtns, Inland Empire, adj. Colorado Des, Orange & San Diego cos; mostly alluvial fans and benches in western Riverside Co; dunes in deserts; not rare in the deserts	Feb-Jul	FED: none BLM: S CA: S2 CRPR: 1B.1	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Moderate: suitable habitat present.
Acmispon haydonii *(Lotus haydonii)* Pygmy lotus	Perennial herb; rocky places in desert scrub, pinyon juniper woodland; about 1700–4000 ft. elev.; San Diego and Imperial Cos., Baja	Jan-Jun	FED: none BLM: S CA: S3 CRPR: 1B.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Astragalus crotalariae Salton milk-vetch	Perennial herb; sandy flats and alluvial fans; below about 1000 ft. elev.; Sonoran Desert, to Arizona and Baja	Jan-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	High: Suitable habitat present; records from within 1 mile of Project area.
Astragalus insularis var. *harwoodii* Harwood's milk vetch	Annual herb; sand, mainly dunes, also washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora (Mexico)	Jan-May	FED: none BLM: none CA: S2 CRPR: 2B.2	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	Annual herb; windblown or stabilized dune sand; below about 800 ft. elev.; E Mojave and S Sonoran deserts, Ariz., Baja, Sonora (Mexico);	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Astragalus sabulonum Gravel milk-vetch	Annual/perennial herb; sandy or gravelly soil in flats, washes, roadsides in desert dunes, Mojavean desert scrub, Sonoran Desert scrub; 200–3050 ft. elev.; Imperial, Inyo, Riv., and San Diego Cos.	Feb-Jun	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.
Bursera microphylla Little-leaf elephant tree	Drought deciduous tree; rocky slopes, about 600–2300 ft. elev.; scattered occurrences in Imperial, Riverside, San Diego counties to Ariz., Baja, and mainland Mexico	Jun-Jul	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: known from just north of survey area.	Minimal: marginally suitable habitat, not known from within 5 miles of survey area.	Low: known from just northwest of survey area.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Calliandra eriophylla Pink fairy-duster	Perennial deciduous shrub; sandy or rocky areas in Sonoran Desert Scrub; 400–4900 ft. elev.; SW U.S. and Baja, Imperial, Riv., and San Diego Cos.	Jan-Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.
Castela emoryi Crucifixion thorn	Perennial shrub; fine sand or silt, slopes, washes, plains, non-saline bottomlands, about 350–2100 ft. elev;. widespread but rare, Calif. deserts to Ariz., Baja and Sonora;	Jun-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Minimal: suitable habitat present, no record within 10 miles.	Low: suitable habitat present,	Minimal: suitable habitat present, no record within 10 miles.
Chaenactis carphoclinia var. *piersonii* Pierson's pincushion	Annual herb; open desert vegetation; about sea level to 1700 ft. elev.; lower slopes of Santa Rosa Mtns, San Diego, Riv. and Imperial Cos;	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.3	Low: suitable habitat present,	Minimal: suitable habitat present, well outside of geographic range.	Low: suitable habitat present,
Chylismia arenaria (Camissonia arenaria) Sand evening-primrose	Annual or perennial herb; desert shrublands, sandy or rocky washes or slopes below about 3000 ft. elev.; Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: suitable habitat present, not known from within 10 miles,	Minimal: suitable habitat present, outside of geographic range.	Low: suitable habitat present, not known from within 10 miles,
Cryptantha costata Ribbed cryptantha	Annual herb; windblown and stabilized sand, desert shrublands; below about 1650 ft. elev.; Calif., E Mojave and Sonoran deserts, to Ariz. and Baja	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat in washes.	Moderate: suitable habitat in survey area.	Low: marginally suitable habitat in washes.
Cryptantha holoptera Winged cryptantha	Annual herb; desert shrublands; about 100–4000 ft. elev.; E Mojave Desert, Sonoran Desert, to W Ariz. and Nevada (widely scattered)	Mar-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: numerous plants observed within several phases of the quarry.	Moderate: suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Cylindropuntia (*Opuntia*) *wigginsii* Wiggin's cholla	Cactus; sandy soils in Sonoran Desert scrub; about 100–2900 ft. elev.; known from six localities in San Diego, Imperial, and San Bernardino Cos. A sporadic hybrid of *Cylindropuntia ramosissima* and *C. echinocarpa*, generally not considered a valid species.	Mar	FED: none BLM: none CA: S1? CRPR: 3.3	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Cylindropuntia wolfii Wolf's opuntia	Cactus; Sonoran Desert scrub; about 330–4000 ft. elev.; restricted to Imperial and San Diego Cos. In California and south into Baja	Mar-May	FED: none BLM: none CA: S3 CRPR: 4.3	**Present**: dozens of plants observed growing in the southern phases of the quarry.	Low: marginally suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Ditaxis serrata var. *californica* California ditaxis	Perennial herb; sandy washes and canyons, low desert and adj. mtns.; about 100–3250 ft. elev.; La Quinta E to Desert Center, also Anza-Borrego	Mar-Dec	FED: none BLM: none CA: S2? CRPR: 3.2	Moderate: suitable habitat present.	Minimal: outside of geographic range.	Moderate: suitable habitat present.
Eucnide rupestris Annual rock-nettle	Annual herb; rock crevices & cliffs; Sonoran Desert shrubland, about 1600–2000 ft. elev.; Imperial and San Diego cos, Ariz., Baja & mainland Mexico	Dec-Apr	FED: none BLM: none CA: S1 CRPR: 2B.2	**Present**: dozens of plants present within the southern phases of the quarry.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Euphorbia abramsiana (*Chamaesyce abramsiana*) Abrams' spurge	Annual herb; sandy flats; about sea level to 3,000 ft. elev.; East Mojave Desert, Joshua tree NP, and low desert, to Ariz. and Mexico	Aug-Nov	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia arizonica *(Chamaesyce arizonica)* Arizona spurge	Perennial herb; creosote bush scrub, stabilized sandy flats (in Calif.); below about 1000 ft. elev.; Palm Springs and Borrego Valley areas E to Texas and mainl. Mexico, S to central Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia platysperma Flat-seeded spurge	Annual herb; sandy soils in desert dunes and Sonoran Desert scrub; 200–330 ft. elev.; Calif., Ariz., Sonora Mex.; Imperial, Riv., San Bern. (?), San Diego Cos.	Feb-Sep	FED: none BLM: S CA: S1 CRPR: 1B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Low: marginally suitable habitat
Funastrum utahense (*Cynanchum utahense*) Utah vine milkweed	Climbing perennial herb; sandy or gravelly soils; about 500–4700 ft. elev.; E and S Mojave Desert through Joshua Tree NP and Anza-Borrego regions, to S Nevada, NW Ariz., and SW Utah	Apr-Jun	FED: none BLM: none CA: S4 CRPR: 4.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Moderate: suitable habitat

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Horsfordia alata Pink velvet-mallow	Perennial shrub; Sonoran Desert shrublands, rocky canyons or sandy washes; below about 1700 ft. elev.; Riv. and Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Horsfordia newberryi Newberry velvet-mallow	Rocky places, Sonoran Desert shrublands; below about 2600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Ipomopsis tenuifolia Slender-leaved ipomopsis	Perennial herb; rocky or gravelly soils in chaparral, desert shrublands, pinyon juniper woodlands; about 300–4000 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Lupinus excubitus var. *medius* Mountain Springs bush lupine	Shrub; desert shrubland, pinyon juniper woodland; about 1400–4500 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: S CA: S2 CRPR: 1B.3	Minimal: suitable habitat present, outside of geographic range.	Low: marginally suitable habitat present, known from just west of alignment.	Minimal: suitable habitat present, outside of geographic range.
Lycium parishii Parish's desert thorn	Perennial shrub; arid slopes and sand flats; below about 3300 ft. elev.; W low desert (Riv., Imperial, and San Diego Cos.) and (historically) interior valleys (Riv. Co.), disjunct to Ariz. and Sonora, Mexico	Mar-Apr	FED: none BLM: none CA: S1 CRPR: 2B.3	Low: marginally suitable habitat present.	Moderate: suitable habitat, known from just east of the alignment.	Low: minimally suitable habitat
Lyrocarpa coulteri Coulter's (Palmer's) lyrepod	Annual; rocky slopes, washes, gravelly flats, Sonoran Desert shrubland; about 400–2600 ft. elev.; San Diego, Imperial, Riv. Cos., N and central Baja	Dec-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: Very few (<5) plants observed within the quarry (see text).	Moderate: marginally suitable habitat, known from just south of the alignment.	Low: marginally suitable habitat
Malperia tenuis Brown turbans	Annual; sandy soils in desert shrublands; about sea level to 1100 ft. elev.; Sonoran Desert, few locations in Calif. (incl. Split Mtn); N Baja	Mar-Apr	FED: none BLM: none CA: S2 CRPR: 2B.3	**Present**: dozens of plants observed at several phases of the quarry expansion.	High: suitable habitat present, known from within 0.5 miles of the alignment.	**Present**: a few plants observed along the alignment near the quarry gate.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Mentzelia hirsutissima Hairy stickleaf	Annual; desert washes, alluvial fans, talus slopes; below about 2000 ft. elev.; scattered Sonoran Desert locations in California and Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Moderate: suitable habitat present; known from within about 2 miles of the quarry.	Moderate: suitable habitat is present; known from within about 5 miles of the alignment.	High: suitable habitat is present; known from within about 1 mile of the alignment.
Mirabilis tenuiloba Slender-lobed four o'clock	Perennial herb; rocky slopes in Sonoran Desert shrublands; about 1000–3600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat is present	Low: marginally suitable habitat	Low: marginally suitable habitat
Nemacaulis denudata var. gracilis Slender woolly-heads	Annual herb; coastal and desert dunes, desert shrubland; below about 2600 ft. elev.; Coachella Valley and (disjunct) San Diego Co. coast, Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Petalonyx linearis Narrow-leaf sandpaper-plant	Perennial shrub; sandy and rocky canyons in Sonoran and Mojavean Desert scrubs; below about 4,000 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.3	High; reported from the quarry in 2005. Suitable habitat is present.	Low: marginally suitable habitat.	High; suitable habitat present; known from within about 1 miles of the alignment.
Pholistoma auritum var. *arizonicum* Arizona pholistoma	Annual herb; Mojavean Desert scrub; 900–2740 ft. elev.; Calif., Ariz., Baja and Sonora Mexico	Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.
Pilostyles thurberi Thurber's pilostyles	Internal stem parasite on *Psorothamnus*, esp. *P. emoryi*; usually windblown or stabilized sand; below about 1000 ft. elev.; Colorado Desert through SW states and Sonora, Mexico	Jan	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat present	High: suitable habitat is present and *Psorothamnus emoryi* is common along the alignment.	**Present**: approximately ten plants observed on the northern pipeline alignment.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Proboscidea althaeifolia Desert unicorn-plant	Perennial herb; generally sandy soils, desert shrubland, about 500–3300 ft. elev.; Sonoran Desert to Arizona and Mexico	May-Aug	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present	Low: marginally suitable habitat present	Low: marginally suitable habitat present
Selaginella eremophila Desert spike-moss	Perennial herb; mountainous or hillside rock outcrops and crevices, about 600–3000 ft. elev.; lower desert-facing slopes of San Jacinto Mtns and adj. desert, to Texas and Baja	May-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: marginally suitable habitat present.	Minimal: no suitable habitat present	Minimal: no suitable habitat present.
Senna covesii Coves's cassia	Low-growing, mostly herbaceous perennial; desert washes; 740–4250 ft. elev.; Colorado Desert to Nevada, Arizona and Baja Calif.	Apr-Jun	FED: none BLM: none CA: S3 CRPR: 2B.2	Low: marginally suitable habitat present	Minimal: well below the elevation range.	Minimal: well below the elevation range.
Teucrium cubense ssp. *depressum* Dwarf germander	Annual or perennial herb; sandy alluvium, washes, etc., below about 1300 ft. elev.; scattered Sonoran Desert locations, to Texas and Baja Calif.	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Xylorhiza orcuttii *(Machaeranthera orcuttii)* Orcutt's woody aster	Perennial herb; gen. on gypsum soils; canyons or lower slopes, desert shrublands; sea level to about 1200 ft. elev.; Riv., Imperial, and San Diego Cos., N Baja	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.2	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity

General references: Baldwin et al., 2012; BLM, 2010; CDFW, 2018; CNPS, 2018; CCH, 2018.

***Federal designations* (*Fed*):** (federal ESA, USFWS).

END:	Federally listed, endangered.
THR:	Federally listed, threatened.
Candidate:	Sufficient data are available to support federal listing, but not yet listed.
Proposed:	Formally proposed for the federal status shown.
BGEPA:	Bald and golden eagle protection act.
BCC:	Birds of conservation concern.

Bureau of Land Management (BLM)
Sensitive: Species recognized by the BLM as sensitive.

State designations (CA): (CESA, CDFW)
END: State listed, endangered.
THR: State listed, threatened.
RARE: State listed as rare (applied only to certain plants).
CSC: California Species of Special Concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.
WL: Species that were either previously listed as SC and have not been state listed under CESA; or were previously state or federally listed and now are on neither list; or are on the list of "Fully Protected" species.
FP: Fully protected. May not be taken or possessed without permit from CDFG.
SA: Special animal. Tracked by the CNDDB as species of conservation concern.

CDFW Natural Diversity Data Base Designations: Applied to special-status species; where correct category is uncertain, CDFW uses two categories or question marks.
S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
S1.1: Very threatened
S1.2: Threatened
S1.3: No current threats known
S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
S4: Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5: Demonstrably secure or ineradicable in California. No threat rank.
SH: All California occurrences historical (i.e., no records in > 20 years).
SX: Presumed extirpated in California.

California Rare Plant Rank designations. Note: According to the California Native Plant Society (http://www.cnps.org/cnps/rareplants/ranking.php), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.
1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2A Plants presumed extinct in California but more common elsewhere in their range.
2B: Plants rare, threatened or endangered in California but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.

California Rare Plant Rank Threat designation extensions:
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

Definitions of occurrence probability: Estimated occurrence probabilities are based on literature sources cited earlier, field surveys, and habitat analyses reported here.
Present: Observed on the site by qualified biologists.
High: Habitat is a type often utilized by the species and the site is within the known range of the species.
Moderate: Site is within the known range of the species and habitat on the site is a type occasionally used.
Low: Site is within the species' known range but habitat is rarely used, or the species was not detected during focused survey(s) covering less than 100% of potential habitat or completed in marginal seasons.
Minimal: No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or the species was not detected during focused survey(s) covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall.
Absent: No suitable habitat on the site and these has no potential to be present.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
FISHES						
Cyprinodon macularius Desert pupfish	Desert ponds, springs, marshes, and creeks in southern California. Restricted to tributaries of the Salton Sea (i.e. Salt Creek and San Felipe Creek) and several refuge populations.	Year-around	FED: **END** BLM: none CA: **END,** S1	Absent: no aquatic habitat within the Project area. Known from approx. 9.5 miles to the NE.	Absent: no aquatic habitat within the Project area. No record near the pipeline alignment.	Absent: no aquatic habitat within the Project area. Known from approx. 7 miles to the NE
REPTILES						
Coleonyx switaki Barefoot banded gecko	Massive rock outcrops and boulders; below about 2000 ft. elev.; Anza-Borrego Desert State Park through much of NE Baja	Spring-Summer	FED: none BLM: S CA: **THR**, S1	Low: no suitable habitat on gypsum outcrops or alluvial wash; marginally suitable habitat on adjacent metamorphic outcrops; not found during field surveys.	Minimal: no suitable habitat.	Minimal: no suitable habitat.
Phrynosoma mcalli Flat-tailed horned lizard	Open, sand flats and dunes; below about 850 ft. elev. Coachella Valley southward to N Baja	Spring-Summer	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Moderate: suitable habitat present; heavy off-road vehicle use reduces likelihood of occurrence.	High: suitable habitat present; known from two recent records along alignment.
Uma notata Colorado Desert fringe-toed lizard	Fine, loose, windblown sand; sparse desert scrub, desert dunes, dry lakebeds, desert wash, sandy beach or riverbank; below 590 ft. elev.; Colorado and Sonoran deserts south of Salton Sea in Imperial and San Diego Cos.	Mar-Oct	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Minimal: marginally suitable habitat; heavy off-road vehicle use reduces likelihood of occurrence.	Moderate: suitable habitat; no records in vicinity.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
BIRDS						
Accipiter striatus Sharp-shinned hawk	Nests and hunts in forest & woodland mainly north of S Calif. (may breed in S Calif. mtn woodlands); also forages in open areas; regularly winters in S Calif.	Spring-early Summer	FED: none BLM: none CA: WL, S4	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	Year-around	FED: BGEPA, BCC BLM: S CA: FP, WL, S3	Low (Nesting): no nests observed, marginally suitable nesting habitat. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout
Athene cunicularia Burrowing owl	Nests mainly in rodent burrows, usually in open grassland or shrubland; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico; sparse in desert scrub	Year-around	FED: BCC BLM: S CA: SSC, S3	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. **Present** (Wintering): one occupied burrow observed during surveys.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.
Buteo regalis Ferruginous hawk	Forages over grassland and shrubland; winters in W and SW N Amer.; breeds in Great Basin and N plains.	Winter	FED: BCC BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

				Project Component		
Special-Status Wildlife Species	**Habitat and Distribution**	**Activity Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
Buteo swainsoni Swainson's hawk	Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nests in Western Antelope, San Joaquin, and Owens Valleys in scattered trees within grasslands, shrublands, or agricultural landscapes.	Spring and Fall	FED: none BLM: S CA: THR, S3	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.
Chondestes grammacus Lark sparrow	Lowlands, foothills; brushy habitats with scattered trees or shrubs; much of Calif.	Year-around	FED: none BLM: none CA: SA, S4S5	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
Circus cyaneus Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; throughout N America	Winter; rare in Summer	FED: none BLM: none CA: SSC, S3	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco columbarius Merlin	Uncommon in winter in S Calif. desert and valleys; breeds in northern N America	Winter	FED: none BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	FED: none BLM: none CA: WL, S4	Moderate (Nesting): no nests observed, suitable nesting habitat present. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; not dense forest; widespread in N America (declining significantly in midwest); valley floors to about 7000 ft. elev.	Year-around	FED: none BLM: none CA: SSC, S4	**Present**: observed during surveys.	High**:** suitable habitat is present throughout.	High**:** suitable habitat is present throughout.
Polioptila melanura Black-tailed gnatcatcher	Desert shrublands, gen. thickets of mesquite, palo verde, or acacia, occas. in open shrubland (mostly winter); Calif. deserts thru S Texas, Baja, and arid mainl. Mexico	Year-around	FED: none BLM: none CA: WL, S3S4	**Present**: observed nesting during surveys.	Low: marginally suitable habitat within alignment.	Moderate: suitable habitat within alignment; not observed.
Toxostoma lecontei LeConte's thrasher	Open shrubland, often sandy or alkaline flats; Mojave and Colorado deserts, SW Central Val. & Owens Valley, east to Nevada, Utah, Arizona;	Year-around	FED: BCC BLM: none CA: SA, S3	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
MAMMALS						
Macrotus californicus (*M. waterhousii*) California leaf-nosed bat	Desert shrublands and arid lowlands, W San Diego Co. to W Ariz., Baja and Sonora, Mexico; gen. roosts in mineshafts, forages over open shrublands	Year-around	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Antrozous pallidus Pallid bat	Rock outcrops in shrublands, mostly below about 6000 ft. elev.; Calif, SW N Amer. through interior Oregon and Washington; hibernates in winter	Warm season	FED: none BLM: S CA: SSC, S3	Low (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

				Project Component		
Special-Status Wildlife Species	**Habitat and Distribution**	**Activity Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
Corynorhinus (*Plecotus*) *townsendii* Townsend's big-eared bat (incl. “pale,” “western,” and other subspecies)	Many habitats throughout Calif and W N Amer., scattered populations in E; day roosts in caves, tunnels, mines; feeds primarily on moths	Year-around	FED: none BLM: S CA: SSC, S2	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Euderma maculatum Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N Amer. but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Unknown	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Eumops perotis californicus Western mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roosts in deep rock crevices, forages over wide area	Year-around	FED: none BLM: S CA: SSC, S3S4	High (Roosting): roosts just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Nyctinomops femorosaccus (*Tadarida femorosaccus*) Pocketed free-tailed bat	Deserts and arid lowlands, E Riv. and San Diego Cos. Thru SW US, Baja, mainland Mexico; roosts mainly in crevices of high cliffs; forages over water and open shrubland	Year-around	FED: none BLM: none CA: SSC, S3	High (Roosting): known to roost on sandstone cliffs just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	Desert scrub, desert succulent scrub, pinyon and juniper woodland; prefers sandy, herbaceous areas, usually in association with boulders, rocks or coarse gravel.	Year-around	FED: none BLM: none CA: SSC, S3S4	Low: At eastern edge of range; suitable habitat present.	Minimal: At eastern edge of range; marginally suitable habitat.	Low: At eastern edge of range; suitable habitat present.
Neotoma albigula venusta Colorado Valley woodrat	Desert shrublands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada; closely associated with beavertail or mesquite thickets	Year- around	FED: none BLM: none CA: SA, S1S2	Low: At edge of range; suitable habitat present.	Minimal: At edge of range; marginally suitable habitat.	Low: At edge of range; suitable habitat present.
Onychomys torridus ramona Southern grasshopper mouse	Mainly desert scrub, also chaparral, coastal scrub, riparian, and other habitats; Mojave Desert and southern Central Valley of Calif.	Year-around	FED: none BLM: none CA: SSC, S3	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.
Taxidea taxus American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer.	Year-around	FED: none BLM: none CA: SSC, S3	High: suitable habitat present; no sign observed during surveys.	Moderate: suitable habitat present; heavy disturbance in area, no sign observed during surveys.	High: suitable habitat present; no sign observed during surveys.
Ovis canadensis nelsoni pop. 2 (*O. c. cremnobates*) Peninsular bighorn sheep Distinct Population Segment	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riv. Co. to N Baja	Year-around	FED: **END** BLM: none CA: **THR**, FP, S2	**Present**: observed during surveys.	Minimal: marginally suitable habitat and isolated from nearby mountains by a busy highway.	Low: marginally suitable habitat and isolated from nearby mountains by a railway.
Vulpes macrotis arsipus Desert kit fox	Arid areas with grasslands, agricultural lands, or scrub areas with scattered shrubby vegetation. Requires open, level areas with loose-textured, sandy loamy soils for digging dens. SW US and N Mex.	Year-around	FED: none BLM: CA: FP	High: no sign observed during surveys, suitable habitat present throughout.	Moderate: no sign observed during surveys, marginally suitable habitat present.	High: no sign observed during surveys, suitable habitat present throughout.

References: American Ornithologists Union, 1998 (including supplements through 2013); Barbour and Davis, 1969; BLM, 2010; CDFW, 2018; Feldhammer et al., 2003; Garrett and Dunn, 1981; Hall, 1981; Jennings and Hayes, 1994; Stebbins, 2003; Wilson and Ruff, 1999.
Conservation Status and Occurrence Probability defined in footnote to Table 3.

Chaparral sand verbena (*Abronia villosa* var. *aurita*). Chaparral sand verbena is a BLM sensitive species and has a CRPR of 1B.1. It is a perennial herb in the four o'clock (Nyctaginaceae) family. It grows in the western Sonoran Desert, San Jacinto Mountains, and coastal sides of southern California mountains (CNPS, 2018). In the desert, it is found in desert shrublands on dunes, sandfields, and sandy washes. Chaparral sand-verbena is an annual or perennial herb that tends to integrate with the common desert sand-verbena (*A. villosa* var. *villosa*). Its distribution and identification are unclear in published reference works, including Murdock (2012), CNPS (2018), and CNDDB (CDFW, 2018). The conservation concern is primarily for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert where the variety is considered rare (Roberts et al. 2004).

Chaparral sand verbena was not observed within the Project area during focused surveys, which were conducted during two years with below average rainfall. It has a moderate potential to be present along the northern pipeline alignment following a year with higher than average rainfall.

Orcutt's aster (*Xylorhiza orcuttii*). Orcutt's aster is a BLM sensitive species and has a CRPR of 1B.2. It is a woody perennial in the aster (Asteraceae) family that blooms from March to April (CNPS, 2018). It grows in the western Sonoran Desert from the Salton Sea in the east to Anza Borrego State Park in the west, north to near Salton City and south to near Interstate 8. It is a woody perennial that is present year-round and flowers in the spring (CNPS, 2018). It is most commonly found in arid canyons and nearly barren slopes in areas vegetated by creosote-bush scrub (Baldwin et al. 2012). Several of the records also note that it grows on sandy, clay, alkali, and gypsum substrates (CDFW, 2018).

Orcutt's aster was not observed during focused surveys of the Project area. It has a moderate potential to be present within all three components of the Project area as a waif from upstream populations that are known to occur within 0.75 miles of the Project area.

Other Special-status Plants

Several other special-status plant species ranked by CNPS and CDFW has at least a moderate potential to be present. These include several plants ranked a CRPR 2 species and CRPR 4 species. These species, with at least a moderate potential to be present are described below.

Harwood's milk vetch (*Astragalus insularis* var. *harwoodii*). Harwood's milk vetch has a CRPR of 2B.2. It is an annual herb in the pea (Fabaceae) family that blooms from March to April (CNPS, 2018). It grows in sandy**,** windblown soils throughout much of the western Sonoran Desert from near Anza Borrego State Park in the south, to the Whipple Mountains in the north and east into Arizona (CDFW, 2018). It is an annual that requires adequate rainfall to trigger germination. It is known from several records in the immediate vicinity of the existing pipeline near Plaster City, and was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Harwood**'s** milk vetch was not observed during focused surveys of the Project area**,** which were conducted during two years with below average rainfall. It has a high potential to be present in fine sand accumulations within all three components of the Project area in a year with higher than average rainfall.

Annual rock-nettle (*Eucnide rupestris*). Annual rock-nettle has a CRPR of 2B.2. It is an annual herb in the stick-leaf (Loasaceae) family and blooms from December through April. It is found in Sonoran Desert scrub at elevations from about 400 to 2,000 feet in California (Imperial and San Diego counties), Arizona, and northern Mexico. In California, it has been documented growing on gypsum soils. However, further south into Mexico it does not seem to show any soil affinity and has been observed on volcanic soils as well as more typical granitic substrates (SEINET, 2018).

Annual rock-nettle was observed within the Project area during focused surveys. Dozens of plants were growing on eroded gypsum cliffs, in adjacent gypsum bedrock, and downstream in sandy washes. All observations were in the southeastern phases of the quarry including Phases 6 through 9. Additional plants are not expected in other portions of the Project area.

Parish's desert thorn (*Lycium parishii*). Parish's desert thorn has a CRPR of 2B.3. It is a shrub in the nightshade (Solanaceae) family and blooms in the Spring (CNPS, 2018). It is found in a number of isolated locations throughout southern California with the largest concentration in Anza Borrego State Park (CCH, 2018). It is historically known from within about 1 mile of the existing pipeline near Plaster City.

Parish's desert thorn was not observed during the focused surveys of the Project area. It has a moderate potential to be present along the existing pipeline near Plaster City.

Brown turbans (*Malperia tenuis*). Brown turbans has a CRPR of 2B.3. It is an annual herb in the aster (Asteraceae) family and blooms from February through April (CNPS, 2018). It is found in sandy or gravelly areas of Sonoran Desert scrub at elevations from about 50 to 1,100 feet in California (Imperial and San Diego counties) and Baja California, Mexico. It is known from numerous locations in the vicinity of the Project area (CCH, 2018).

Dozens of plants were observed within Phases 7 through 9, primarily on rocky slopes and flats adjacent to the sandy washes. Several plants were also observed along the proposed pipeline near the entrance gate to the quarry. Additional plants are likely to be present in similar habitats within the Project area in a year with higher than average rainfall. It also has a high potential to be present along the existing pipeline although it was not observed during the surveys.

Hairy blazingstar (*Mentzelia hirsutissima*). Hairy blazingstar has a CRPR of 2B.3. It is an annual herb is the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on rocky substrates and talus in the Sonoran Desert at elevations up to about 2,000 feet in California (Imperial and San Diego counties) and in Baja California, Mexico. It was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Hairy blazingstar was not observed during the focused surveys of the Project area, which were conducted during two years with below average rainfall. It has a high potential to be present within the quarry and along the proposed pipeline alignment in a year with higher than average rainfall.

Narrow-leaf sandpaper-plant (*Petalonyx linearis*). Narrow-leaf sandpaper-plant has a CRPR of 2B.3. It is a shrub in the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on sandy and rocky substrates in a variety of habitats throughout the Sonoran Desert. It was documented on gypsum soil in 2015 just south of the Project area. Narrow-leaf sandpaper-plant was reported from the Project area in an earlier report (White and Leatherman, 2005) although it was not observed during the recent surveys and may no longer be present. It has a high potential to be present in the quarry and has a moderate potential to be present within the proposed pipeline alignment.

California Rare Plant Rank 4 Species. Four special-status plants with a CRPR of 4 were observed during the surveys: winged cryptantha (*Cryptantha holoptera*), Wolf's opuntia (*Cylindropuntia wolfii*), Thurber's pilostyles (*Pilostyles thurberi*), and Coulter's lyrepod (*Lyrocarpa coulteri*). Winged cryptantha and Coulter's lyrepod were both observed at several locations in the upper wash within Phases 6 through 9.

Dozens of Wolf's opuntia were observed on upland terraces within Phases 7 through 9. Thurber's pilostyles were observed growing on dyebush along the proposed pipeline.

Four special-status plants with a CRPR of 4 have at least a moderate potential to be present: Salton milk-vetch (*Astragalus crotalariae*), ribbed cryptantha (*Cryptantha costata*), Utah vine milkweed (*Funastrum utahense*), and slender-lobed four o'clock (*Mirabilis tenuiloba*). These plants are ranked as CRPR 4 species (i.e., a "watch list," not indicating rarity) and none are listed as threatened or endangered.

IV. D. 2. Special-status Wildlife

Table 4 and Attachment 5 list the special-status wildlife species reported within the USGS 7.5-minute quads surrounding the Project site. The State and federally listed Peninsular bighorn sheep is present in the area. Two candidates for State listing, flat-tailed horned lizard and Townsend's big-eared bat, may also occur. Loggerhead shrike, San Diego desert woodrat, and burrowing owl, all California Species of Special Concern, have been observed on the Project site. The locations of field observations of burrowing owl and peninsular bighorn sheep remains are shown on Figure 3 (Biological Resources). Several other special-status wildlife species could also be present (see Table 4); those species with at least a moderate potential to be present are described below.

Listed Threatened or Endangered Wildlife

Peninsular bighorn sheep (*Ovis canadensis nelsoni* DPS). The Peninsular bighorn sheep (PBS) is federally listed as endangered, State-listed as threatened and designated as a "fully protected animal" by the California Fish and Game Code. Under the federal Endangered Species Act listing (USFWS, 2009) "Peninsular bighorn sheep" refers to the regional Distinct Population Segment (DPS) of desert bighorn sheep (or Nelson's bighorn sheep). Under the 1971 California Endangered Species Act listing, Peninsular bighorn sheep refers to the subspecies *Ovis canadensis cremnobates*, although that subspecies is no longer recognized in more recent literature. Regardless of nomenclature, both listing designations refer to the same animals: the bighorn sheep population found in the Peninsular Ranges of southern California and southward into Baja California. This population is recognized as genetically isolated from other populations located farther to the north and east. PBS inhabit the desert slopes of the Peninsular ranges from Riverside County south to Baja California, Mexico, including the Fish Creek Mountains, where the Plaster City Quarry is located. PBS biology, life history, and conservation status are described by the US Fish and Wildlife Service (USFWS 2011a) in its 5-year review. A few key aspects of its life history are seasonal movements and habitat use, reliance on surface water availability, and metapopulation geography.

The decline of PBS is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses associated with residential and commercial development; and high predation rates.

The USFWS (2000) has prepared a Recovery Plan for PBS, identifying 9 Recovery Regions, extending from the northernmost Recovery Region 1 on the desert-facing slopes of the San Jacinto Mountains (about 50 miles north of the Plaster City Quarry), to the southernmost Recovery Region 9 extending from the Coyote Mountains (about 10 miles south of the quarry expansion area) south to the international border (the range of the animals within Recovery Region 9 extends southward through the Coyote Mountains, across Interstate 8, and across the international border into Mexico). The Plaster City Quarry is located within Recovery Region 8 (Vallecito Mountains). The estimated numbers of Peninsular bighorn sheep in Recovery Regions 8 and 9 increased during the period from 1998 to 2016 (USFWS, 2011a; Colby and

Botta, 2017). CDFW (Colby and Botta, 2017) estimated the Region 8 and Region 9 populations at 163 and 256 animals respectively.

The behavioral response of desert bighorn sheep (including PBS) to human activity is considered to be highly variable and dependent upon many factors, including: (1) the type of activity, (2) an animal's previous experience with humans, (3) size or composition of the bighorn sheep group, (4) location of the bighorn sheep relative to elevation of the activity, (5) distance to escape terrain, and (6) distance to the activity (USFWS 2011a, p. 14). Responses can range from cautious curiosity to immediate flight or abandonment of habitat, as well as disruption of normal social patterns and resource use. In some cases, Nelson's bighorn sheep have become acclimated to quarrying activities. For example, in local resident Nelson's bighorn sheep the northern San Bernardino Mountains have become acclimated to limestone quarrying and make regular use of inactive quarries and even active quarries during inactive hours (personal observations and communications with quarry staff by Scott D. White).

There are several research publications on Nelson's bighorn sheep activity in the vicinity of mining operations. None of these papers addresses PBS; however the following three address Nelson's bighorn sheep populations in arid habitats in California or Arizona that are comparable to the Plaster City Quarry site. The summary that follows is based on these three publications, particularly the discussion by Bleich and coauthors (2009), which is the most recent of the three, comparing and contrasting their own study results with the others and with broader Nelson's bighorn sheep literature.

- Panamint Mountains, California (Oehler et al., 2005)
- Silver Bell Mountains, Arizona (Jansen et al., 2007)
- San Bernardino Mountains, California (Bleich et al., 2009)

Bleich and coauthors (2009) state that "the characteristic that best defines mountain sheep habitat is the presence of escape terrain," and that many habitat studies have found that juxtaposition of escape terrain with valuable water or food sources has been important. They identify potential mining-related habitat benefits and deterrents, as follows: Mining can enhance escape terrain by removing vegetation (i.e., improving visibility) and creating steeper topography, especially if the improved escape terrain is near valuable food or water sources. However, mining-related disturbance could outweigh the benefits of improved escape terrain if it causes sheep to avoid the quarry areas. They found that Nelson's bighorn sheep in the San Bernardino Mountains limestone mining areas generally avoided roads (human disturbance) but did not avoid mined areas and in fact favored them over random locations.

Bleich and coauthors (2009) cite several publications indicating that Nelson's bighorn sheep can habituate to disturbance, and are frequently observed on or near active mines, stating "we speculate that such disturbance is of minimal concern to sheep when it is consistent in nature and occurs in highly predictable locations." In the Panamint Mountains study, Oheler and coauthors found that proximity to active mining did not affect home ranges, diet composition, or demographic indices, and that Nelson's bighorn sheep activity in the mining area was not affected by frequency of blasting or mine productivity.

The USFWS designated critical habitat for PBS in 2009. Much of the proposed quarry expansion area, as well as the southern and western currently active quarry areas, are within designated critical habitat (see Figure 4, Peninsular Bighorn Sheep Critical Habitat). In its critical habitat designation (2009), the USFWS described "primary constituent elements" (PCEs) essential to the conservation of Peninsular bighorn sheep. The 5 PCEs are paraphrased below:

- Moderate to steep, open slopes and canyons, that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups;

- Presence of a variety of forage plants, including shrubs that provide a primary food source year-round, grasses, and cacti that provide a source of forage in the fall, and forbs that provide a source of forage in the spring;
- Steep, rugged, slopes (60 percent slope or greater) that provide secluded space for lambing and terrain for predator evasion;
- Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (e.g., foraging areas and escape terrain); and
- Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water.

On the whole, the USG claims and the surrounding slopes and canyon provide all PCEs identified above. Intermittent or permanent water is available from a natural rock tinaja water source located in the Fish Creek Mountains south of the quarry area. Several additional water sources are located about one to three miles west of the quarry area, within Anza Borrego Desert State Park (Colby and Botta, 2017). Open slopes and canyons, as well as steep rugged slopes, are largely found above or in between the active quarry areas and the gypsum deposits proposed for future quarrying. Alluvial fans and washes, recognized as important foraging areas, are found throughout the area, including the large unnamed alluvial wash where below-grade quarrying would occur.

The Plaster City Quarry expansion would take place on two landforms: gypsum outcrops located above the level of the alluvial wash, and below-grade gypsum deposits, located beneath the alluvial wash. The planned expansion areas are located within larger claims, which also include more extensive upland and alluvial topography. In terms of the PCEs, the gypsum outcrops provide limited habitat value because of their sparse vegetation cover and minimal plant species diversity (predominantly desert fir, which is not identified as a PBS food plant). In addition, the surfaces of the undisturbed outcrops are covered by a crusted clay material that collapses underfoot, possibly affecting its habitat value for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups (the first PCE).

The existing alluvial wash habitat located in the expansion areas planned for below-grade mining provides the high diversity of food plants identified in the second and fourth PCEs and may provide habitat connectivity within the canyon (per the fourth PCE), although most evidence of PBS movement in the area is found on the steep slopes and ridges, rather than in the canyon.

CDFW conducts regular monitoring of radio-collared Peninsular bighorn sheep throughout the area. The annual reports identify several “ewe groups” within each Recovery Region; each ewe group comprises a few adult female Peninsular bighorn sheep and their offspring. There are four identified ewe groups in Recovery Region 8 (Colby and Botta, 2017). The Plaster City Quarry is located between the mapped home ranges of Vallecito Mountains ewe group and the Fish Creek Mountains ewe group. Suitable and occupied PBS habitat occurs to the west, northwest, south, and east of the USG Quarry site, but not to the north. CDFW radio collar data provided by R. Botta (see Figure 5, Fish Creek Mountains Radio Collared Ewe Locations) show numerous PBS occurrences around the Plaster City Quarry, around Split Mountain (west of the quarry) and the Fish Creek Mountains (east, south, and southeast of the quarry). Ewes with young lambs have been reported within about 1 mile of the project area.

The existing quarry and planned expansion areas are located along the eastern (Phases 1 through 10) and western (Phases S1, S2, and S3) slopes above a broad alluvial wash between the home ranges of two ewe groups whose core ranges are in the steeper mountains to the east and west. The two home ranges are in steep topography above the active quarry and planned expansion areas. At the narrowest point the overlap where the two ewe groups share territories (and, thus, biological connectivity) is about 4,000 feet wide, ranging in elevation between about 800 and 1,800 feet above MSL, with a few peaks above 2,100 feet above MSL. The existing quarry and planned expansion may limit potential east-west movement across the canyon, although the animals seem to avoid the canyon floor (even to the south of the active quarry area). Proposed quarry development would not prevent continued geographic contact between the two ewe groups south of the planned quarry areas.

Peninsular bighorn sheep give birth mainly in late winter through early spring (February - April). Lambing is the period from one month before birth until weaning (at about 4 to 6 months of age). Births can occur over much of the winter or spring, so lambing activity can extend from January through August, but lambing season is generally identified as the period from 1 January through 30 May. During pregnancy and lactation, ewes require high-protein forage, as found on deeper more productive soils of alluvial fans and canyon bottoms but retreat to better escape terrain late in pregnancy and to give birth. Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. The Fish Creek Mountains surrounding the Project site provide suitable habitat components for lambing habitat and appear to be used by radio-collared females (ewes) during lambing season.

Peninsular bighorn sheep also occasionally move across valleys (not generally considered suitable habitat for most activities) between disjunct habitat areas. These movements can supplement small sub-populations with new members and provide for gene flow among multiple small groups. This pattern of partially-isolated sub-populations with occasional demographic and genetic movement among them is known as a metapopulation. The proposed project would not prevent long-distance movement among distant sub-populations.

Peninsular bighorn sheep have been observed, albeit infrequently, at the existing quarry site and the proposed quarry expansion areas. During biological surveys conducted for this report, Peninsular bighorn sheep sign such as tracks, scat (feces), and “beds” (i.e., cleared areas for resting or sleeping) were commonly observed on upland slopes above the proposed quarry expansion areas, especially near the southern end of the proposed quarry areas, and less often observed in the unnamed alluvial wash. Skeletal remains of an apparent bighorn sheep were also observed near the southern end of the proposed quarry areas (Figure 3). Peninsular bighorn sheep tracks were also observed commonly near the active quarry area in 2014, following a year of heavy rainfall and subsequent ponding within the quarry. Due to the ponding, USG pumped water from the quarry, and multiple sheep tracks indicated the animals had repeatedly crossed the wide wash (from the west) to reach the water discharge. California Department of Parks and Recreation unpublished data also include Peninsular bighorn sheep occurrences in the Project area: sign was observed in the Shoveler claims area on the west part of the Project site, and at the narrow-gauge rail line where a sheep evidently crossed from west to east north of the USG processing area, and went into the Fish Creek Mountains above the existing Quarry. Finally, a Peninsular bighorn sheep was documented on the USG Project site in 2006. In early August, quarry staff saw an animal in the Shoveler claims area at the west part of the Project site; over the next few days, it was seen twice more near the processing area (though the workers did not get good views). Finally, on August 7, 2006, the remains of a dead immature male Peninsular bighorn sheep were found at the Shoveler claims area. The USG Quarry Manager contacted Anza-Borrego Desert State Park. A Park officer investigated the site and disposed of the remains. There was no evidence of predation (e.g., by mountain lion) or major injury and the cause of death is unknown.

The CDFW has only recently begun to understand ewe group structure and seasonal movements within the Fish Creek Mountains (FCM). CDFW observed 15 PBS, including 1 lamb, 1 yearling ewe, 6 ewes and 4 rams in the FCM during the 2016 aerial survey. However, during more recent ground telemetry monitoring upwards of 30 sheep have been observed.

There is no abundance estimate for the FCM ewe group alone. Because PBS move between the Fish Creek Mountains and Vallecito Mountains by way of Split Mountain, CDFW's surveys of the two mountain ranges are combined. For the 2016 aerial survey the total Vallecito and FCM adult ewe estimate was 79, the adult ewe/yearling ewe estimate was 101 and the adult and yearling ewe and ram estimate was 163. Given the increase in the PBS population over the last 10+ years and CDFW's improved understanding of ewe group structure, CDFW hopes to estimate PBS abundance by individual ewe groups. Doing so will depend on funding availability.

To date, CDFW has data from 3 GPS-collared ewes. Thus far, the core use area is in a large north-south running drainage on the eastern side of the Fish Creek Mountains (east of the ridgeline above the USG quarry). As of 2017 the distribution and movement patterns had not changed significantly in the Vallecito and FCM ewe groups.

There are only a few known water sources within the Fish Creek Mountains, including the north/south trending canyon at the northeast end of the FCM ewe group's home range. In summer 2016, the lower tinaja was checked and found to be dry; however, CDFW GPS data show this canyon to be the most heavily used during the summer months. As of 2017, numerous tinajas in the FCM have been dry for the past few years (prior to above-average rainfall in 2019). If recurring drought conditions continue these water sources may no longer meet the needs of PBS within FCM and water enhancement projects may be warranted.

In summary, CFDW's monitoring efforts indicate two potential mitigation opportunities proposed action. First, additional funding for the monitoring project could lead to a more complete understanding of the FCM ewe group's numbers, habitat usage, and relationship to USG quarry activities. Second, a supplemental water source could improve habitat conditions during recurring drought years.

Swainson's hawk (*Buteo swainsoni*). Swainson's hawk is a listed as Threatened by CDFW and is recognized as sensitive by the BLM. It is a hawk that preys on small mammals, birds, large insects, reptiles, and amphibians. Swainson's hawks usually hunt from perches such as fence posts and low trees, or from vantage points on the ground. This species is most commonly found over open plains and prairies in the Great Plains and relatively arid areas of western North America. It builds rather flimsy nests in shrubs and trees along wetlands and drainages and in windbreaks in fields and around farmsteads. They nest in the San Joaquin, Owens, and western Antelope Valleys of California. The primary wintering grounds for this species is in Argentina. They migrate through southern California every spring and fall. Suitable foraging habitat for this species is present throughout the Project area.

Barefoot banded gecko (*Coleonyx switaki*). This summary is based on reviews by Stebbins (2003) and CDFG (2005). The barefoot banded gecko is a state-listed threatened species and a BLM sensitive species. It is not listed under the federal ESA. Its documented geographic range extends from San Diego and Imperial counties south to central Baja California, Mexico. It occurs in rock outcrops and boulder-strewn slopes and canyons. It is rarely observed because of its steep, poorly accessible habitat, and because it spends most of its time in rock crevices or below ground. Due to its behavior and inaccessible habitats, its range in southern California may be more extensive that shown by documented occurrences. For example, Stebbins (2003) reported it as far north as State Highway 74 in the Santa Rosa Mountains, Riverside County. The nearest known occurrences to the USG Project Site are within Anza

Borrego Desert State Park and in the Coyote Mountains. The principle threats to barefoot banded gecko appear to be collecting live animals for the reptile hobbyist trade, and consequent habitat destruction (e.g., prying rock crevices apart). Barefoot banded gecko is unlikely to occur on the quarry site or pipeline alignments. The gypsum outcrops do not provide suitable boulders or crevices. The surrounding metamorphic rock outcrops and perhaps the alluvial wash may offer marginal habitat such as boulders and crevices. There is no suitable habitat on any of the pipeline project components. Barefoot banded geckos were not found during field surveys conducted or the 2008 Final EIR/EIS or during recent field surveys in a portion of the gypsum quarry conducted in compliance with Mitigation Measure 3.5-1e of the 2008 EIR/EIS (see Section V. B. 1. Adopted Biological Resource Mitigation Measures) and current CDFW survey protocol (CDFG, 2011).

Desert pupfish (*Cyprinodon macularius*). Desert pupfish are absent from the proposed Project site due to the absence of perennial surface water. However, desert pupfish occurs lower in the watershed, several miles downstream from the quarry. Critical habitat at San Felipe Creek, Carrizo Wash, and Fish Creek Wash and occupied habitat at San Sebastian Marsh are located about 7 miles northeast of proposed Quarry Well No. 3, 11 miles northeast of the Quarry, about 20 miles north of the Plaster City Plant, and about 24 miles north of the proposed wells near Ocotillo.

Historically, desert pupfish were widespread and common in shallow water of stream margins, marshes, springs, and slow-flowing reaches of major rivers in the lower Gila River and Colorado River watersheds in Arizona, California, Baja California, and Sonora Mexico. They are exceptionally hardy, surviving in a broad range of water chemistry and temperature regimes, but they are vulnerable to competition and predation by non-native species. The desert pupfish is endangered due to habitat loss and the introduction of non-native competitors and predators (e.g., *Tilapia*) into its habitat (Minckley et al. 1991; USFWS 1986; Moyle 2002). Dam construction on several of its river and tributary habitats in Arizona and on the Colorado River inundated some occurrences and dewatered others. Surface water diversions have eliminated habitat in some areas, and lowered water tables due to groundwater pumping and groundwater use by invasive shrubs (*Tamarix ramosissima*) have eliminated other occurrences (USFWS 1986, 1993; CDFG 2005). Agricultural pollution may threaten some occurrences. In California, desert pupfish populations persist in native populations, at San Sebastian Marsh and upstream in San Felipe Creek and tributaries (Imperial County), at Salt Creek (Riverside County), and in shoreline pools and irrigation ditches around the Salton Sea (USFWS 1993). They also persist in irrigation canals near the Salton Sea and in a few introduced “refugia” sites, including three in Anza Borrego Desert State Park.

The USFWS designated critical habitat for desert pupfish at San Sebastian Marsh and along portions of its tributaries, San Felipe Creek, Carrizo Wash, and Fish Creek Wash in Imperial County (USFWS 1986). In the critical habitat designation, the USFWS listed several activities that could adversely modify critical habitat, including withdrawal of water, either directly or indirectly, from San Sebastian Marsh. In addition, the USFWS (1993) published a Desert Pupfish Recovery Plan with recommendations for land management and recovery.

BLM Sensitive Species

Flat-tailed horned lizard (*Phrynosoma mcalli*). The flat-tailed homed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. The flat-tailed horned lizard has been proposed for federal listing several times but in each case the USFWS determined that listing was not warranted (USFWS, 2011b). Although not federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003); its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command. Together, these agencies manage several large reserves, including the West Mesa Management Area. A portion of the existing narrow-gauge rail line crosses the West Mesa Management Area (see Figure 1, Project Overview), but none of the project areas identified in this BRTR are located within it. The West Mesa Management Area is located approximately 2 miles north of the proposed replacement pipeline alignment and about 5 miles east of the proposed new pipeline alignment (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003).

The flat-tailed horned lizard's historic range extends throughout much of southeastern California, south-western Arizona, northwestern Sonora and northeastern Baja California, Mexico. Populations are becoming isolated from one another by development. They occur almost exclusively in windblown sand dunes and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 8 inches (20 cm). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003)

Flat-tailed horned lizard was not observed during the surveys. They were observed in the immediate vicinity of the proposed pipeline alignment in 2016 and 2017 (inaturalist 2018). They have a high potential to be present along both pipeline alignments and only a moderate potential to be present in the washes at the downstream end of the quarry.

The USFWS (2011b) determined that flat-tailed horned lizard populations within Management Areas are not low or declining and that most populations (with the exception of occurrences in the Coachella Valley) are not likely to become endangered in the foreseeable future. The USFWS evaluated the conservation efforts implemented under the Rangewide Management Strategy and recognized that these efforts reduce threats and "promote actions that benefit the flat-tailed horned lizard throughout its range." The USFWS states that "there is no information to suggest that the flat-tailed horned lizard population is declining or is in danger of becoming an endangered species in the foreseeable future."

Colorado Desert fringe-toed lizard (*Uma notata*). Colorado Desert fringe-toed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. It lives in fine, loose, wind-blown sand, primarily in desert dunes and sandy washes. Their range in California includes the Sonoran Desert from Anza Borrego State Park to the Arizona and Mexico borders in Imperial and San Diego counties. Suitable windblown habitat is present along both pipeline alignments. There are recent records of Colorado Desert fringe-toed lizard within about 5 miles of the proposed pipeline (inaturalist 2018). It has the highest potential for occurrence along the proposed pipeline where the habitat is intact and has relatively little disturbance. There is minimal suitable habitat and very few records near the existing pipeline, therefore it has a low potential to be present. No suitable habitat is present within quarry.

Golden eagle (*Aquila chrysaetos*). Golden eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA), recognized as sensitive species by the BLM, and considered a fully protected species by CDFW. They are year-round residents throughout most of their range in the western U.S. In the southwest, they are more common during Winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late Winter and early Spring in the California deserts. In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs, or large trees that are used as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to tend eggs or young at their nests. Foraging habitat consists of open terrain including grasslands, deserts, savanna, and early successional forest and shrubland habitats. They prey primarily on rabbits and rodents, but will take other mammals, birds, reptiles, and some carrion.

Golden eagle home ranges in the Mojave Desert ranged from 1.7 to 1,369 square miles, and averaged 119 square miles (Braham et al., 2015). In any given year, eagles may initiate nesting behavior at one nest, without any activity at the other nests. Eagles may complete breeding by laying eggs and raising chicks, or may abandon the nest without successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites.

Marginally suitable nesting habitat is present within the Project area and there is a low potential for nesting. Numerous cliffs were observed within 0.5 miles of the Project area, and are likely to provide suitable nesting habitat. Suitable foraging habitat is present throughout the Project area and there is a high potential to golden eagles to forage throughout.

Burrowing owl (*Athene cunicularia*). Burrowing owl is a CDFW Species of Special Concern and recognized as sensitive by the BLM. It inhabits arid lands throughout much of the western U.S. and southern interior of western Canada (Poulin et al., 2011). In this portion of its range, some owls are migratory, while some are year-round residents. Burrowing owls prefer flat, open annual or perennial grassland or gentle slopes and spare shrub or tree cover. However, they are routinely found in desert shrub communities, including those that are present in the Project area. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. Burrowing owls often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al., 2008). The breeding season in southern California generally occurs from February to August with peak breeding activity from April through July (Poulin et al., 2011).

A single burrowing owl was observed during surveys of the Project area in October 2014. Given the timing of the survey and that the owl was unpaired, this was likely a dispersing or wintering individual. Subsequent surveys of the Project area conducted during the breeding season did not detect any burrowing owls. However, suitable burrowing owl nesting habitat and foraging habitat is present throughout the Project area. This species is considered to have moderate potential to nest in the Project area.

Bats. Five special-status bat species recognized as sensitive by the BLM have at least a moderate potential to forage over the Project area: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), and Western mastiff bat (*Eumops perotis californicus*). Pocketed free-tailed bat (*Nyctinomops femorosaccus*) also has at least a moderate potential to be present but is not recognized by the BLM as sensitive but is recognized as a CDFW Species of Special Concern. The pallid bat, Western mastiff bat, and California leaf-nosed bat forage in open areas over grasslands, agricultural areas, and other shrublands and roost in a variety of habitats including buildings, rock crevices, and caves (Harvey et. al., 2011). Townsend's big-eared bat roosts primarily in caves and abandoned mines (Harvey et. al., 2011). The spotted bat forages on moths in the desert during winter months and roosts in deep crevices in cliffs (CDFW 2018). The gypsum cliffs and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. In addition, the entire Project area provides suitable foraging habitat for these bats.

Other Special-status Wildlife

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike is a CDFW Species of Special Concern. It is a widespread species in the United States and throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. It most often occurs in open-canopied forest and woodland habitats. It nests in well-concealed microsites in densely foliaged trees or shrubs (Miller, 1931; Bent, 1950). It feeds on large insects, but will also take small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. Loggerhead shrikes often impale their prey on thorns, barbed wire, or other sharp objects. Loggerhead shrike was present within the quarry during nesting season and likely nested there. It has a high potential to be present along the pipeline alignments.

Black-tailed gnatcatcher (*Polioptila melanura*). The black-tailed gnatcatcher is recognized as a watch list species by CDFW. It is a small song bird that nests in desert shrublands, typically in areas with thickets of mesquites, palo verdes, or acacias. They occur from the deserts of southern California east through Texas and south into Mexico. Black-tailed gnatcatchers were observed nesting within the quarry during surveys in the spring of 2016. They were nesting in habitat mapped as catclaw acacia thorn scrub. Suitable nesting habitat is present throughout the Project area with the highest potential for occurrence within the quarry and along the proposed pipeline.

American badger (*Taxidea taxus*). American badger is a CDFW Species of Special Concern. Badger natural history is summarized by Brehme et al. (2012). They were once widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the State. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and use multiple dens and cover burrows within their home range. Badgers move among burrows daily, although they can use a den for a few days at a time. Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Badgers also prey on birds, eggs, reptiles, invertebrates, and carrion. The diet shifts seasonally and yearly depending upon prey availability.

The gypsum outcrops and the alluvial areas of the planned quarry expansion areas provide unsuitable or poorly suitable habitat for digging and burrowing (the gypsum outcrops consist of bedrock overlain by relatively thin layers of weathered, clay-like gypsum material; the alluvium has very high rock content). The two pipeline routes provide suitable burrowing substrates, although their proximity to roads, OHV activity, and the narrow-gauge rail line may dissuade badgers from using those areas. No American badger or its sign was observed during the surveys. Suitable foraging habitat is present throughout the Project area and badgers have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Desert kit fox (*Vulpes macrotis arsipus*). Desert kit fox is protected under Title 14, Section 460, California Code of Regulations, as well as the California Fish and Game Code (Sections 4000-4012), which defines kit fox as a protected furbearing mammal. Both regulations prohibit take of the species. Desert kit fox is an uncommon to rare permanent resident of arid regions of southern California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox prey on rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, and birds (Zeiner et al., 1990). Desert kit fox is primarily nocturnal, and inhabits open, flat areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and pup rearing.

No kit fox or kit fox sign was observed during the surveys. As described above for American badger, suitable foraging habitat is present throughout the Project area and kit foxes have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Prairie falcon (*Falco mexicanus*). Prairie falcon is a watch list species in California. It breeds throughout much of arid western North America. They prey on a variety of small mammals, birds, reptiles, and some large insects. They nest almost exclusively on ledges of cliffs and rock escarpments or, occasionally, in stick nests built on the ledges by ravens or other raptors. There are a few regional breeding records (e.g., at Anza-Borrego Desert State Park [Unitt, 1984]) and nesting prairie falcons may forage over very wide ranges (Johnsgard, 1990). Almost all prairie falcon sightings in the region are made during winter or migration seasons. Suitable nesting habitat is present in the Project area and they have a moderate potential to utilize the habitat. They are likely to occasionally forage within the Project area.

Other Raptors: Several special-status birds of prey are found seasonally in the region, especially during winter and migration: sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and merlin (*Falco columbarius*). Suitable winter or migratory season foraging habitat for these raptors is widely available throughout the region. These species, if present, may forage within the Project area but would not nest because of a lack of suitable habitat.

Native birds. Most birds, including their nestlings and eggs, are protected under the California Fish and Game Code Sections 3503, 3503.5, and 3513, and the federal Migratory Bird Treaty Act. Most of these species have no other special conservation status. Fifteen bird species have been recorded on the site during field surveys (see Attachment 4). Suitable foraging and nesting habitat for protected bird species, as well as “stopover” habitat for migratory songbirds, is found throughout the project area.

V. Conclusions and Recommendations

V. A. Summary of Biological Resources Impacts

The proposed project would directly affect vegetation, habitat, and common species within the project footprint areas, and may directly affect special-status plants or animals. In addition, the project may indirectly affect biological resources in the vicinity of the project footprint, through noise, lighting, disturbance, dust, or other indirect effects. The following paragraphs briefly summarize the expected impacts to biological resources, and several mitigation measures are recommended in the sections that follow.

V. A. 1. Vegetation and Habitat Impacts

Expanded quarrying activities would result in permanent and long-term impacts to native vegetation and habitat (see Table 2). Pipeline construction would affect additional acreage. During quarrying or pipeline construction activities, most wildlife are expected to avoid the project footprint area and immediate vicinity due to unsuitable habitat conditions and human disturbance. After the completion of quarrying or construction activities, vegetation and habitat will remain in a disturbed state for many years, although removal of the disturbance and subsequent recovery (through reclamation) will ultimately replace some habitat components. Quarry phasing and on-site reclamation as specified in the Imperial County authorization would reduce the habitat impacts over time, and measures recommended below would minimize the project footprint area. In addition, habitat effects could be offset through any habitat compensation that may result from permitting for jurisdictional waters impacts through the US Army Corps of Engineers or CDFW, or federal ESA consultation with the USFWS. Project activities could lead to the spread of invasive weeds or introduction of new weed species in the area.

Mitigation measures to avoid or minimize general vegetation and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR 3.5-1a. Revegetation
- EIR 3.5-1b. Phasing of Quarry development and closure
- BIO-1. Integrated Weed Management Plan
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program

V. A. 2. Special-status Plant Impacts

No State or federally listed plants and no BLM Sensitive Plants were observed during the surveys or have potential to be present. Several special-status plants with a CRPR 2B (rare in California but more common elsewhere) or CRPR 4 (watch list) were observed in the quarry expansion areas or new pipeline route. The proposed project would probably take small occurrences of Thurber's pilostyles, brown turbans, Coulter's lyrepod, and annual rock-nettle. Based on the distribution and conservation status of these species and extensive undisturbed ad protected habitat in the surrounding area, this impact would be relatively minor and no mitigation is recommended.

V. A. 3. General Wildlife Impacts

Most wildlife would avoid moving equipment, and equipment operators would avoid clearly visible wildlife (such as large mammals). However, quarrying or pipeline construction could cause mortality of small mammals and reptiles within the project footprint area, particularly during initial grading or site clearing work. Food or water could attract wildlife into the work area, putting animals at risk of injury. Domestic or feral dogs, if present on the site, could prey on native wildlife, or cause injury or mortality by chasing animals. Other potential hazards include vehicle strikes or wildlife entrapment within bores, trenches, or materials (e.g., pipes). The project footprint and surrounding area provide suitable nesting habitat for numerous resident and migratory birds, which may be vulnerable to project activities. Most adult birds would flee from equipment during initial vegetation clearing; however, nestlings and eggs would be vulnerable to mortality during initial site clearing construction, and are also protected by the MBTA and Fish and Game Code. These potential impacts can be minimized or avoided through scheduling initial site disturbance outside the nesting season. One special-status bird species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. An avoidance and mitigation strategy for burrowing owl is recommended. In addition, certain bird species can become entrapped in vertical or horizontal open pipes with diameters from 1 to 10 inches. Cavity-nesting species such as Say's phoebes, owls, woodpeckers, kestrels, and ash-throated flycatchers are particularly vulnerable. Several avoidance and minimization measures, as well as pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid these potential impacts.

The quarry expansion and pipeline construction could affect local wildlife movement patterns. Quarrying and construction operations would tend to dissuade most terrestrial animals from crossing the site due to the removal of vegetation and soil which would otherwise provide food, shade, burrowing substrate, and most other native habitat elements. Indirect impacts, including light, noise, and equipment traffic, could also tend to reduce wildlife dispersal across the property. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed quarry operations, and the short-term nature of pipeline construction would have only minimal effects to local wildlife movement. Potential impacts to wildlife movement would be minor and no mitigation specific to wildlife movement is recommended, although avoidance and minimization measures recommended below would serve to minimize potential impacts to local wildlife movement.

Mitigation measures to avoid or minimize general wildlife and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-4. Domestic Animals
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. A. 4. Special-status Wildlife Impacts

The proposed project could directly or indirectly affect special-status wildlife through injury or mortality or through habitat loss or degradation described above. With implementation of avoidance measures recommended below, the project is not expected to take[2] Peninsular bighorn sheep, desert kit fox, America badger, barefoot banded gecko, nesting birds (including burrowing owl) or other special-status wildlife. The planned quarry expansion areas are within designated PBS critical habitat, and the project would directly affect critical habitat, although the planned expansion areas show little evidence of PBS usage. Initial site clearing activities could cause take of special-status reptile (e.g., flat-tailed horned lizard), bird (e.g., burrowing owl), or mammal (e.g., American badger) species if the animals or their active nests or dens are present during the clearing; however, avoidance measures identified below would prevent take. A hydrology analysis indicates that the project would not affect off-site desert pupfish habitat (Bookman-Edmonston 2002a, 2002b). Pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid direct impacts. In addition, habitat effects could be offset through any habitat compensation that may result from federal ESA consultation with the USFWS. Note that any habitat compensation for PBS may also provide suitable nesting or foraging habitat for one or more other special-status species of the area, depending on specific habitat characteristics. Potential impacts are described further for each special-status species in the paragraphs that follow.

Peninsular bighorn sheep. Potential project impacts to PBS are categorized below, into habitat impacts, potential for injury or mortality, disruption of behavior, interruption of access to foraging areas, reproduction and lambing activities, and habitat fragmentation and connectivity.

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[2] Under the California Fish and Game Code, " 'take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." As a state-designated Fully Protected species, no project-related take of Peninsular bighorn sheep is permitted under California law. Under the federal Endangered Species Act, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 'Harass' and 'harm' (not included in the state definition) are further defined in federal regulations as activities, including significant habitat impacts, that are likely to kill or injure wildlife by significantly disrupting or impairing normal behavior patterns such as breeding, feeding, and sheltering, The US Fish and Wildlife Service may authorize take of a federally listed wildlife species through Endangered Species Act Section 7 consultation with BLM.

The project would affect suitable and occupied PBS habitat located adjacent to the existing disturbance area and would occur in phases over the 73-year mining authorization (80-year estimate for mining and final reclamation). In general, mining will proceed from currently active quarry areas in the north toward future phases in the south. Site-specific mining will depend on multiple factors such as gypsum characteristics in various parts of the quarry, blending needs for production, and market conditions. This total habitat effect is diminished because (1) quarry areas would be reclaimed after completion of mining in each area, so that the previously mined areas would be under reclamation as new areas are developed and mined; (2) former quarry areas, even without reclamation, can serve several habitat values for PBS, including escape terrain, sheltering, and bedding; (3) the habitat value of upland gypsum outcrops appears to be relatively low, based on PBS location data (Figure 5), probably due to minimal forage availability and crusted clay surface; and (4) excluding the gypsum outcrops, habitat (e.g., topography and vegetation) in the planned quarry expansion area is similar to habitat throughout Recovery Region 8 (USFWS 2000b); there are no known special habitat resources such as surface water sources or lambing areas within the active planned quarry expansion areas.

Future quarrying would directly affect two habitat types: upland gypsum outcrops and alluvial wash. The upland gypsum outcrops appear to have minimal habitat value, based on vegetation, topography, soil conditions, and PBS location data. The alluvial wash habitat likely supports higher-quality PBS forage, although it is mostly not adjacent to escape terrain due to presence of gypsum outcrops located between the alluvial wash and the upslope escape terrain. PBS locations indicate only infrequent occurrence in the alluvial wash areas. Mining activities would remove forage plants and other habitat components from the alluvial mining areas, and would significantly alter the outcrop quarry areas, possibly creating steep slopes and benches that may serve as escape terrain (Bleich et al., 2009). The total area of planned disturbance to the alluvial wash is approximately 400 acres, mapped primarily as creosote bush scrub, creosote bush – white bursage scrub, catclaw acacia thorn scrub, and smoketree woodland. Upon completion of mining, each below-grade quarry area will be reclaimed to a condition suitable for use as foraging. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS habitat.

The potential PBS direct habitat impacts would be minimized, offset, or reduced over time primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- BIO-1. Integrated Weed Management Plan
- PBS-1. Peninsular Bighorn Sheep Habitat Mitigation

Mining and reclamation have little potential for causing direct injury or mortality to PBS. There exists a possibility of transportation accidents (truck and train) as well as blasting accidents. Truck and train traffic and blasting have occurred on the site since 1921 (the mine has been in continuous operation by USG since 1945) and these activities are visible to PBS from sufficient distances to allow avoidance by PBS. Given the apparent avoidance of active quarry areas by PBS, the probability of injury or death is small. In addition, if the project were to attract or introduce domestic livestock or feral dogs to the site, those animals could either transmit livestock diseases to PBS, or prey on PBS.

The potential for injury or mortality would be minimized or avoided primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-3. PBS Avoidance, Worker Training.

- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures (including 15 mph speed limit)
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Human presence, lighting, dust, construction noise, blasting, noise and vibrations from heavy equipment, may affect PBS behavior in the quarry vicinity. Quarry noise or disturbance impacts may cause PBS to avoid upland habitat adjacent to the planned mining areas that PBS currently use as escape terrain, foraging, or movement among local ewe groups. A number of studies have been conducted to evaluate bighorn sheep responses to human activities (e.g., Hicks and Elder 1979; Keller and Bender 2007; Papouchis et al. 2001) and generally conclude that bighorn sheep increase their distance to humans, especially when they are approached, but the effects of disturbance are temporary. Additionally, PBS appear to acclimate to ongoing activities such as mining (Bleich, 2009 and references cited therein) and fluctuating levels of mining activity, including blasting, did not appear to affect Nelson's bighorn sheep in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009).

Urban Crossroads (2018) prepared a study of quarrying noise at the USG Plaster City Quarry, consisting of long-term (one-hour) measurements from several locations in the existing and planned quarry areas, short-duration noise levels within short distances of quarrying equipment, and short-duration measurement of blasting noise. Urban Crossroads recorded operational levels ranging from 30.8 dBA[3] near the southern end of the planned quarry expansion (about 2 miles from the current activity) to 47.7 dBA in the vicinity of ongoing operations where background noise sources include electrical equipment, people talking, truck engines starting, truck movements, and truck horns sounding for safety purposes. These correspond to faint (below 40 dBA) or moderately loud (above 40 dBA) levels. Short-duration measurement of equipment noise, such as truck pass-by, truck unloading, and crusher activity ranged from 67.7 dBA to 88.2dBA at 50-foot distances, corresponding to loud or very noisy levels. Blasting measured over a 1-second duration registered 128.7 dBZ[4] at a distance of 425 feet, corresponding to 134.9 dBZ at a standard 50-foot distance.

The most likely behavioral response by PBS will be to temporarily avoid active quarrying or materials processing areas, including nearby undisturbed habitat. PBS location data include many data points in the immediate vicinity of the active quarry area, consistent with literature reports indicating acclimation to quarrying activities including blasting. Under the Proposed Action, quarry production and quarrying activities may increase. The Urban Crossroads analysis indicates only a minimal increase in overall noise levels from increased quarry production. Consistent with the behavior of Nelson's bighorn sheep as quarry production increased and decreased in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009), the level of overall disturbance to PBS is not expected to change. The new pipeline construction is unlikely to affect PBS behavior due to the location along the existing narrow-gauge rail line, where PBS occurrence is rare. If PBS are in the vicinity during construction, then the construction activities would likely affect PBS behavior as described above for quarry activities. The pipeline replacement and canal pipeline components of the Proposed Action are not expected to affect PBS behavior because they would not be located in PBS occupied habitat.

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[3] A-weighted sound level, from one-hour recording periods (Urban Crossroads, 2018).

[4] Non-weighted sound level (Urban Crossroads, 2018).

The potential to disrupt PBS behavior would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Mining and reclamation will disrupt portions of the site for at least 80 years, causing habitat loss, disturbance, and potential behavioral effects described above. Mining-related disturbance may cause PBS to avoid accessing foraging habitat within the alluvial wash, if the disturbance is located between regularly-used slope habitat and the alluvial foraging area. Nonetheless, extensive upland and alluvial habitat are available in the surrounding area. The potential extent of interrupted access to foraging areas in the vicinity of the quarry cannot be quantified. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS access for foraging habitat.

The potential to interrupt PBS access to foraging habitat would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Peninsular bighorn sheep lambs and yearlings have been observed in the Fish Creek Mountains east of the quarry. Based on data indicating year-round PBS occupancy, lambing activity (i.e., birth and nursing) presumably occur in the Fish Creek Mountains. GPS location data suggest the most likely lambing area is the north-south trending canyon east of the quarry. Future quarry phases 6Bp, 7Bp, 8, and 9 are nearest to the presumed lambing habitat.

Although there are no expected impacts to reproduction and lambing activities, the project includes a requirement that new ground-disturbing activities (i.e., initial quarry development) and blasting may not take place during lambing season (Jan 1- May 30), except with the approval of USFWS and CDFW. This requirement is identified in:

- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Continuing and expanded quarry operations would tend to dissuade most terrestrial animals, including PBS, from crossing the active quarry areas. Future mining in the southern end of the planned quarry expansion areas (Phases 8 and 9) is near a habitat linkage between occupied habitat to the east and west of the planned quarry expansion area. This linkage is about 4,000 feet wide. Based on location data, PBS regularly use habitat immediately adjacent to the active quarrying areas (Phases 1A, 1B, S1, S2, and S3). Based on these activity patterns, PBS are expected to continue to occupy the upland slopes south of Phases 8 and 9. Quarry areas undergoing reclamation would be accessible to PBS, although their localized behavioral response to the previously active quarry areas is unknown. Nelson's bighorn sheep populations in other areas regularly use inactive quarries for routine activities (Bleich, 2009; San Bernardino National Forest, 2014 and citations therein). Throughout the life of the project, surrounding undeveloped open space would continue to provide access to PBS throughout nearly all of the habitat currently in use by PBS. The new pipeline construction and pipeline replacement components are not expected to affect biological connectivity for PBS. Pipeline construction activities may temporarily dissuade terrestrial animals from using the area. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed plant operations.

The potential to affect biological connectivity would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-3. PBS Avoidance, Worker Training
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Desert pupfish. The project would not directly affect suitable aquatic habitat for desert pupfish. Desert pupfish occurs at San Sebastian Marsh, which is lower in the Fish Creek watershed, about 7 miles northeast of the nearest USG facilities. Potential effects of the project on desert pupfish, if any, would be indirect impact to surface water availability in off-site desert pupfish habitat.

Groundwater extraction was identified as a threat in the desert pupfish listing (USFWS, 1986) and in the recovery plan (USFWS, 1993). It is still considered a threat; especially at occurrences outside California (USFWS, 2010). The potential link between groundwater extraction and off-site aquatic habitat availability to desert pupfish depends on the rate or volume of extraction and groundwater passage within the affected basin or basins. Reduced groundwater level at a given well location could lead to reduced surface water at a spring or seep, depending on the amount of draw-down and the hydrologic link between the well site and the aquatic habitat.

Hydrologic studies prepared by Bookman-Edmonson (2002a; 2002b) and Dudek (2018) addressed the quarry area and proposed Quarry Well No. 3, indicating that neither component of the project would affect occupied pupfish habitat. These studies are described in the following paragraphs.

Hydrologists preparing the analysis have concluded that no impacts will occur to basin water supplies or to San Felipe Creek. The analysis shows a drainage area contributing to the San Felipe Creek of 965,388 acres with a volume calculated on annual average precipitation of 583,883 acre-feet of water. The Quarry, including the planned expansion area, contributes 396 acre-feet of water to the basin (0.07 percent by volume). This surface drainage would continue uninterrupted with all drainage from the Quarry directed to the wash.

Hydrogeologists also addressed the possible impacts of withdrawing approximately 26 acre-feet per year of well water from the same basin for use at the Quarry. A calculated draw down of the proposed well at maximum capacity would have a draw down at Fish Creek and San Felipe Creek Springs of approximately 1 millimeter. This is a conservative estimate because values produced by the Theis equation are for drawdowns in confined aquifers. However, the aquifer in the well area is unconfined, and drawdowns will be much less than those for a confined aquifer. Pumping 26 acre-feet per year from an unconfined aquifer will not produce drawdowns that are noticeable at distances of 1,000 feet or less. Additionally, the location of the San Jacinto Fault, a probable groundwater barrier between the well and Fish Creek and San Felipe Creek Springs, would most likely prevent a cone of depression extending beyond the fault. Thus, the extraction of water from the well at capacity will not have a detectable impact directly or cumulatively on habitat supporting the desert pupfish.

Additionally, recent significant loss of surface water in the occupied habitat is believed to be linked to seismic activity (Poff, 2017) or cessation of nearby irrigation due to conversion of agricultural lands to a solar facility (Todd Groundwater, 2018).

Barefoot banded gecko. The barefoot banded gecko is not expected to occur on the site. However, due to its cryptic nature and inaccessible habitats, it may be more widespread than currently understood. If barefoot banded gecko were to occur on a future mining site, potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Most potential impacts would be minimized through measures identified for general wildlife impacts (above). Due to its status as a CESA-listed threatened species and a BLM sensitive species, the following additional mitigation measure was included in the 2008 Final EIR/EIS. The full text of the measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- EIR 3.5-1e. Barefoot banded gecko

Flat-tailed horned lizard. Suitable habitat for flat-tailed horned lizard is present along several parts of the planned pipeline routes. Potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Although not state or federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003). In order to minimize potential impacts to flat-tailed horned lizard, Mitigation Measure EIR 3.5-2was included in the 2008 Final EIR/EIS, and additional Mitigation Measure FTHL-1 is recommended. The full text of the measures may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- FTHL-1. Flat-tailed Horned Lizard Mitigation

Special-status bats. Several special-status bats could forage over the site or possibly roost in rock crevices within planned quarry expansion areas. Impacts to foraging habitat would be minimal and would be mitigated through measures identified above under Vegetation and Habitat Impacts. Potential impacts to roosts could cause injury or mortality to special-status bats. This potential impact would be avoided or minimized through Mitigation Measure BIO-4 (Wildlife Impact Avoidance and Minimization Measures). The full text of BIO-4 may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

Desert kit fox and American badger. Both species could use the quarry or pipeline project areas, although they were not observed during field surveys. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, habitat loss, and noise and disturbance to surrounding habitat. Mitigation measures identified under general wildlife impacts would minimize this potential impact.

Nesting birds including burrowing owl. Native birds are protected under the California Fish and Game Code and federal Migratory Bird Treaty Act. Special-status birds of the region are addressed in Section IV. D. but most protected bird species have no special conservation status. The entire Project site and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species. Bird nests including eggs and nestlings are vulnerable to Project construction activities that may disrupt nesting behavior or damage nests, birds, or eggs. Burrowing owls reside in burrows year-round and may retreat into their burrows if threatened by human activities; therefore, burrowing owl avoidance requires pre-construction surveys and avoidance measure for occupied burrows at any time of year. Mitigation measures identified under general wildlife impacts, in combination with the measures identified below, would minimize potential impacts to nesting birds. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-1c. Migratory birds
- BO-1. Burrowing owl avoidance
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. B. Existing and Recommended Biological Resource Mitigation Measures

The proposed project includes quarry reclamation in compliance with the California Surface Mining and Reclamation Act (SMARA). In addition, the Imperial County project authorization includes eleven measures to mitigate biological resources impacts, quoted in Section V.B.1. below. Aspen recommends several additional measures in Sections V.B.2. and V.B.3. to mitigate biological resource impacts, including several general avoidance and minimization measures and several additional measures for specific resources.

V. B. 1. Adopted Biological Resource Mitigation Measures

The following eleven measures are identified in the 2008 Final EIR/EIS and included as project requirements under the Imperial County authorization. These measures are still applicable and would reduce adverse effects identified herein. Additional mitigation measures are recommended in Sections V.B.2. and V.B.3. to supplement these adopted measures and further reduce biological resources impacts.

EIR-1. Minimize Temporary Use Areas. During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed, for immediate use.

EIR-2. Mining and Reclamation. Mining and reclamation shall be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the reclamation plan.

EIR-3. PBS Avoidance, Worker Training. The project proponent shall instruct employees and other visitors to the mine to avoid Peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project proponent shall establish a training program, including new-employee orientation and annual refreshers, to educate employees regarding bighorn sheep and the importance of avoidance.

EIR-4. Domestic Animals. The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.

EIR 3.5-1a. Revegetation. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.

EIR 3.5-1b. Phasing of Quarry development and closure. Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.

EIR 3.5-1c. Migratory birds. In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.

EIR 3.5-1d. Peninsular bighorn sheep. USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the USFWS that will: (1) provide a statement about whether the proposed project is “likely or not likely to jeopardize” the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

EIR 3.5-1e. Barefoot banded gecko. Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG [now CDFW] and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to “take” barefoot banded gecko must be completed prior to land disturbance.

EIR 3.5-1f. Agency contacts for impacts to streambeds. Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.

EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy. USG will comply with the FTHL Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.

V. B. 2. Recommended General Avoidance and Minimization Measures

BIO-1. Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk and fountain grass in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the project.

BIO-2. Mining and Construction Activity Monitoring and Reporting. Prior to the beginning of any quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS.

The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

- The Designated Biologist will notify BLM's Authorized Officer and Service at least 14 calendar days before the initiation of quarry expansion of new ground-disturbing activities.
- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see BIO-4, below) and will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see PBS-3, below).
- The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.
- The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the project to administer the WEAP and ensure compliance with the Impact Avoidance and Minimization Measures listed below, and
- The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of the following programs/plans as well as compliance/non-compliance with each conservation measure:
    - Integrated Weed Management Plan
    - Worker Education Awareness Program
    - Reclamation Plan
    - Wildlife Mortality Reporting Program
    - Peninsular Bighorn Sheep Monitoring Plan

BIO-3. Worker Education Awareness Program. This measure supplements measure EIR-4, above, by expanding on the worker training program. Prior to project approval, USG will develop a worker education awareness program (WEAP), to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction and O&M personnel. The WEAP will be approved by the BLM, Service, and CDFG, and will include the following:

- Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female PBS.
- The biology and status of special-status species of the area, including Peninsular bighorn sheep.
- A summary of the avoidance and minimization measures and other conservation measures.
- An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data.
- An explanation of the flagging or other marking that designates authorized work areas.
- Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep is encountered.

BIO-4. Wildlife Impact Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- To the extent feasible, initial site clearing for quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) should be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.
- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven (7) days prior to initial site clearing for quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active. If potential special-status bat roosting habitat is present (e.g., rock crevices) the biologist will check to see if bats are present. If an occupied bat roost is present, USG will confer with a bat specialist to determine if avoidance or pre-disturbance eviction is feasible or necessary.
- For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the work day. the Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85ºF) for the presence of FTHL or Colorado fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of FTHL or Colorado fringe-toed lizard prior to backfilling.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity.
- Speed limits along all access roads will not exceed 15 miles per hour.
- Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.
- The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.

- Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).
- No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.
- To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.
- No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site project facilities and activities, or in support of any other Project activities.
- Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.
- Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.

In addition to these measures, Aspen recommends incorporating measures for noise management, dust control, hazardous materials management, erosion control, and water quality in the appropriate sections of the SEIS, to avoid or minimize potential effects of these environmental issues to biological resources.

V. B. 3. Recommended Species-specific Avoidance and Minimization Measures

The following additional measures are recommended to avoid, minimize, or offset project impacts to burrowing owl (BO) and Peninsular bighorn sheep (PBS).

BO-1. Burrowing owl avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where Project activities will not be permitted. The buffer area will be based on the nature of Project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, burrowing owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with CDFW guidelines, including provision of replacement burrows prior to the exclusion.

FTHL-1. Flat-tailed Horned Lizard Mitigation. This measure supplements EIR Mitigation Measure 3.5-2, above. In addition to implementing standard mitigation measures contained within the Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003) while constructing Quarry Well #3 and the Quarry pipelines (specified in Mitigation Measure 3.5-2), USG will implement those standard measures during ground-disturbing activities on the Replacement Pipeline Route or other project activities located in windblown sand habitat.

PBS-1. Peninsular Bighorn Sheep Habitat Mitigation. Mitigation of Peninsular bighorn sheep habitat impacts will include 1:1 on-site reclamation as specified in the Mining and Reclamation Plan and Mitigation Measure EIR-2 (above, from the 2008 Final EIR/EIS). Additionally, mitigation may include habitat compensation that may result from federal ESA consultation with the USFWS. Potential compensation lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition as compensation habitat will be subject to review and approval by the BLM and Wildlife Agencies.

PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting. USG will record and report all on-site PBS observations to CDFW and BLM and will support the CDFW PBS monitoring and reporting program within the Fish Creek and Vallecito Mountains. USG will develop a reporting form for all PBS observations, including data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation. In addition USG will fund the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data within these ewe groups over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek and Vallecito Mountains Ewe Groups, and all resulting data will be available to BLM to support the long-term analysis of PBS activities in the federal action area.

PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through May 30) as defined in the Recovery Plan, except with prior approval by USFWS and CDFW (the Wildlife Agencies).
- Minimize blasting during the lambing season (January 1 through May 30) within Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.
- If a bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.
- Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.

- When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).
- Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

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ATTACHMENTS

ATTACHMENT 1
FIGURES

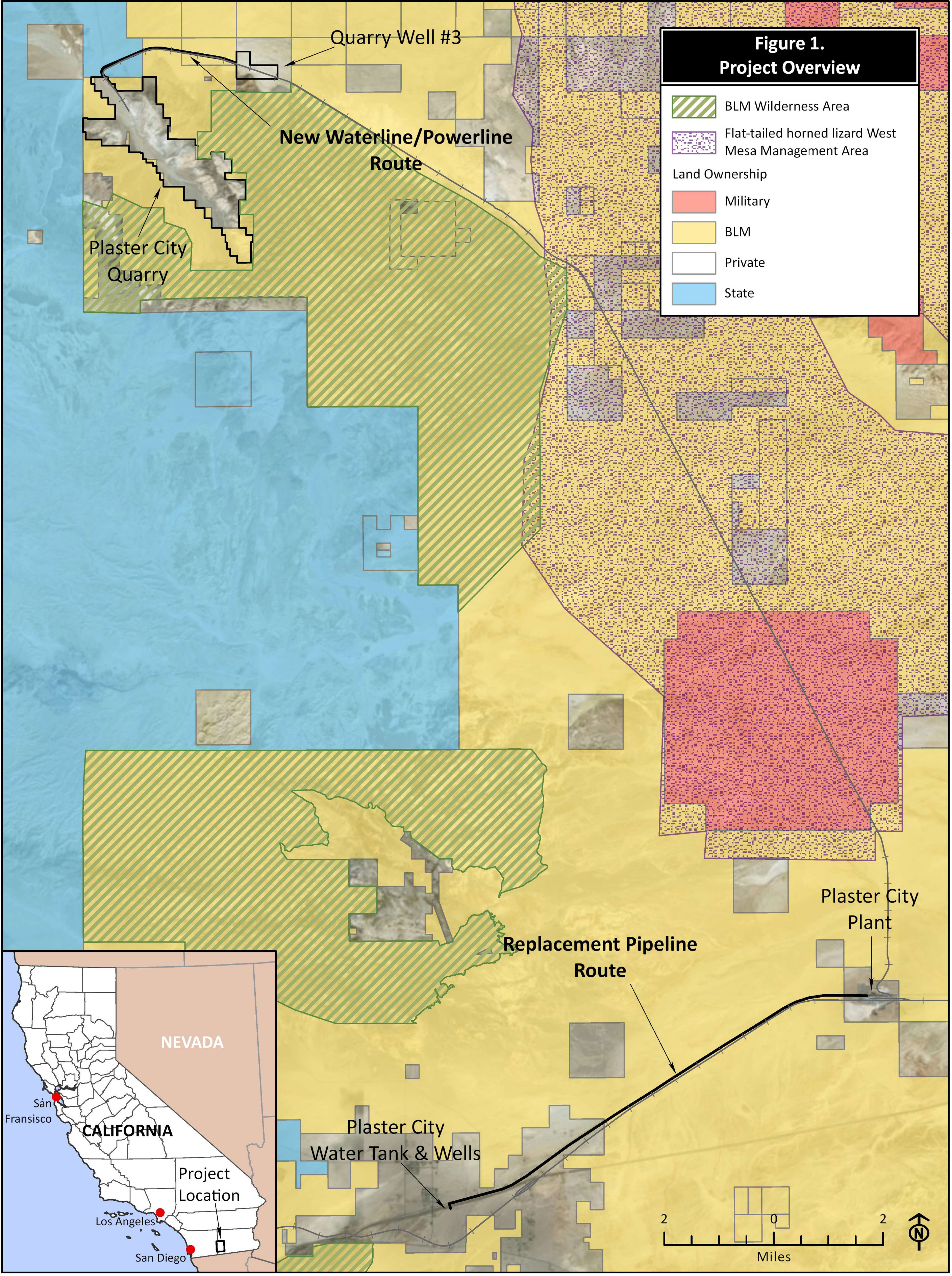

Figure 1.
Project Overview

Data Sources: BLM, 2016; Lilburn, 2018; ESRI, 2018

April 2018

Aspen Environmental Group

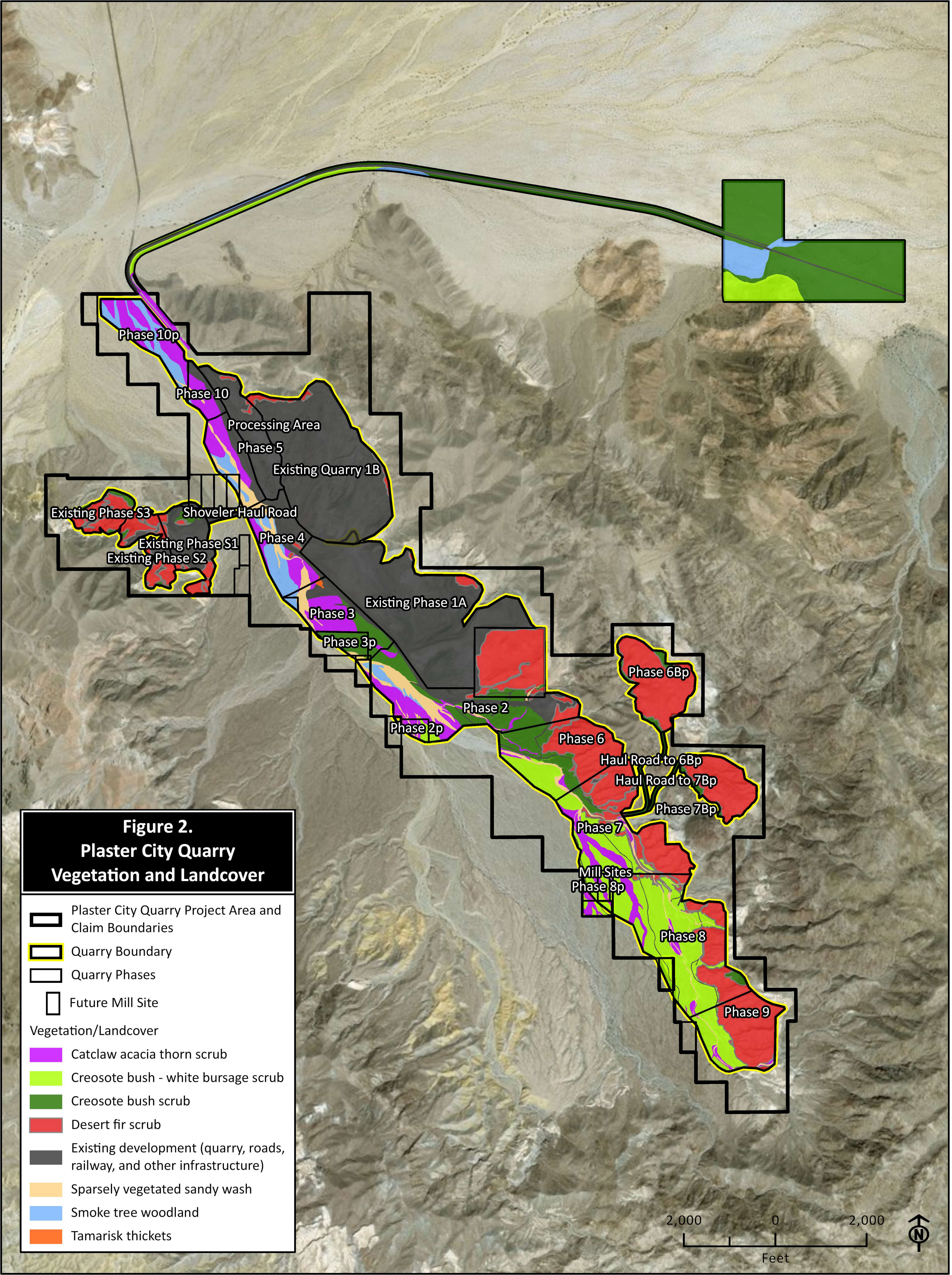

**Figure 2.
Plaster City Quarry
Vegetation and Landcover**

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

April 2018

Aspen
Environmental Group

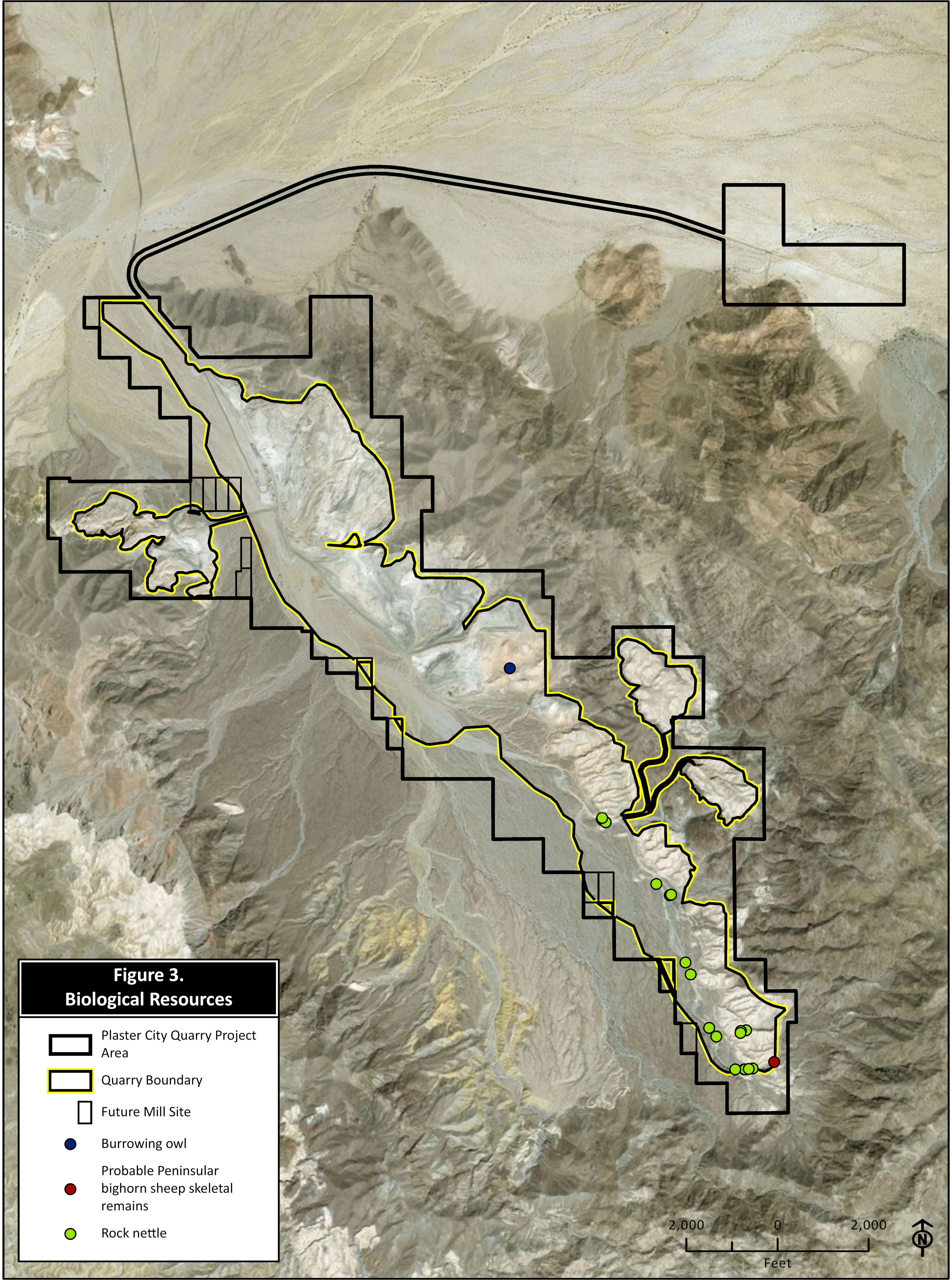

Figure 3.
Biological Resources

April 2018

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

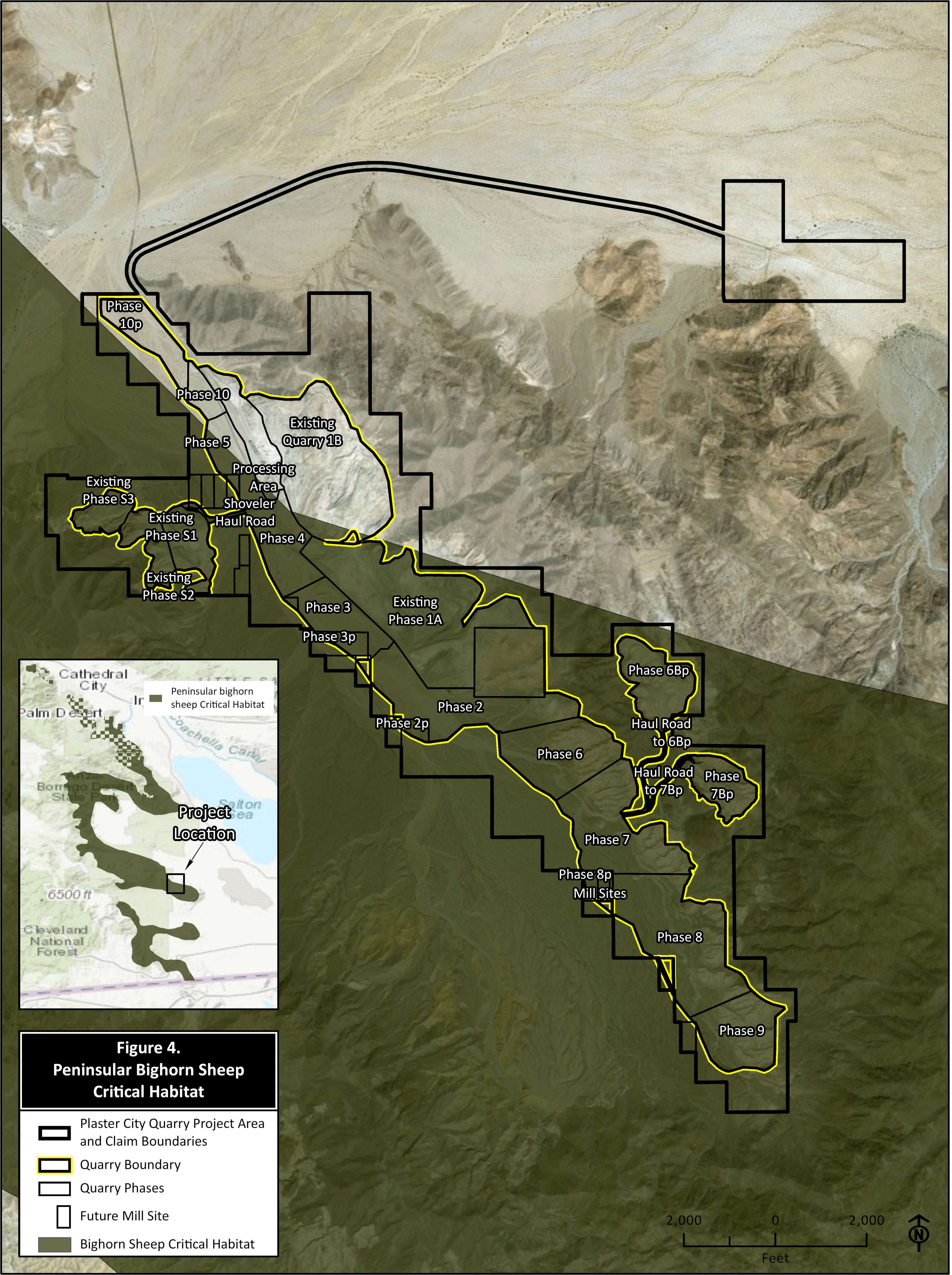

Figure 4.
Peninsular Bighorn Sheep Critical Habitat

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018; USFWS 2017, CNDDB 2018

April 2018

Aspen Environmental Group

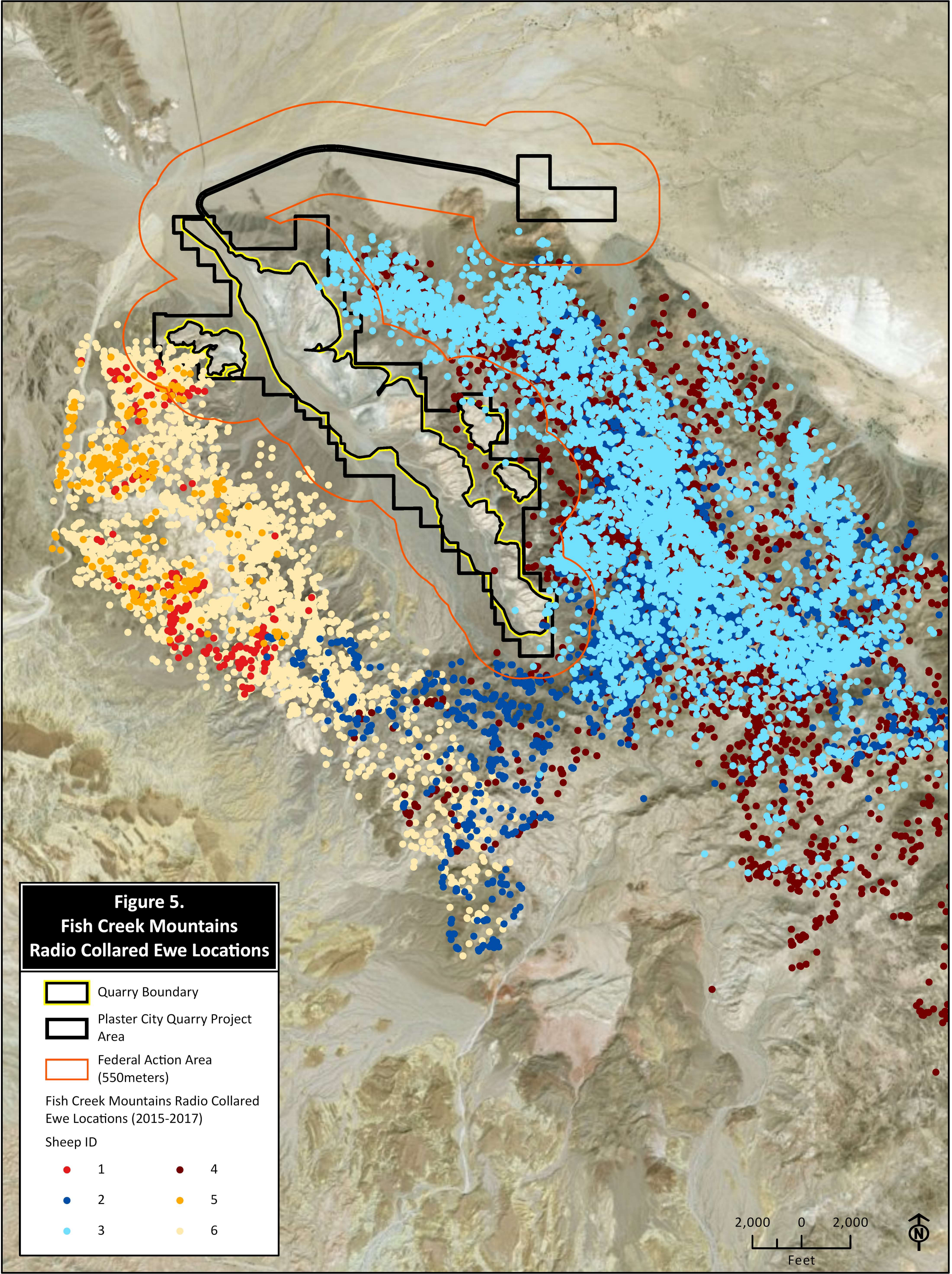

Figure 5.
Fish Creek Mountains Radio Collared Ewe Locations

Data Sources: CDFW, 2018; Lilburn, 2018; ESRI, 2018

ATTACHMENT 2
PHOTO EXHIBIT

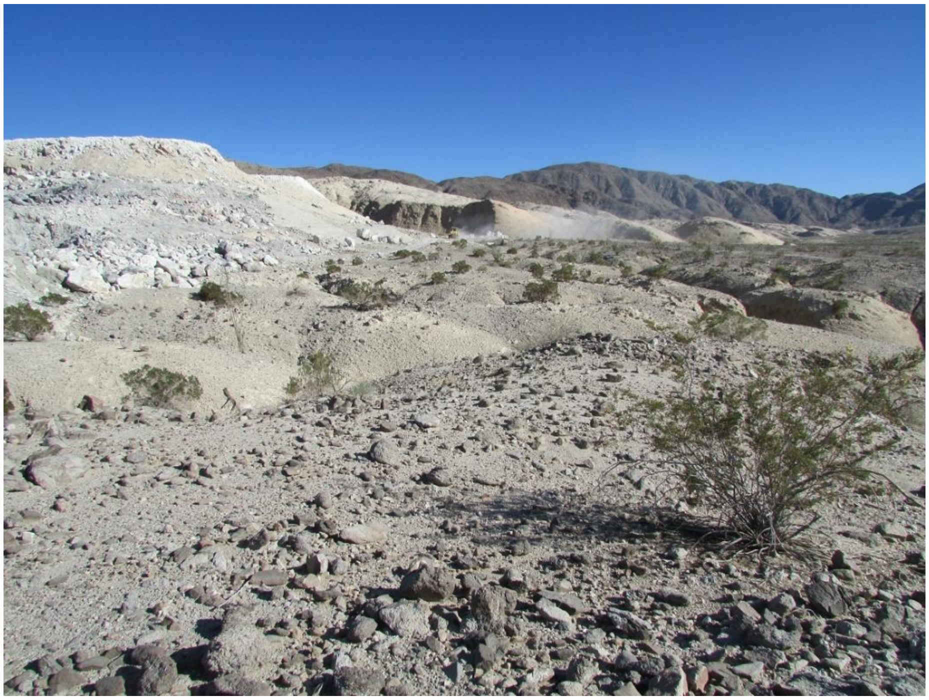

Photo 1: View of typical creosote bush scrub within the quarry expansion area.

Photo 2: View of typical creosote bush – white bursage scrub within the quarry expansion area.

Photo 3: View of catclaw acacia thorn scrub within the wash of the quarry expansion area.

Photo 4: View of smoke tree woodland within the wash of the quarry expansion area.

Photo 5: View of the sparse desert fir scrub growing on gypsum within the quarry expansion area.

Photo 6: View of tamarisk thickets mapped within the wash of the quarry expansion area.

Photo 7: Overview of a portion of the active quarry.

Photo 8: Wind-blown sand habitat along the proposed replacement pipeline alignment.

Photo 9: Wind-blown sand habitat along the proposed new pipeline alignment.

Photo 10: Annual rock-nettle on gypsum within the quarry expansion area.

Photo 11: Brown turbans identified within the quarry expansion area.

Photo 12: Wolf’s opuntia (right) growing alongside silver cholla (left) within the quarry expansion area.

Photo 13: Coulter's lyrepod within the quarry expansion area.

Photo 14: Thurber’s pilostyles growing along the proposed new pipeline alignment.

Photo 15: Peninsular bighorn sheep tracks observed within the quarry expansion area.

Photo 16: Apparent Peninsular bighorn sheep skeletal remains observed within the quarry expansion area (see Figure 3).

Photo 17: Burrowing owl observed within the quarry expansion area (non-breeding season).

Photo 18: Black-tailed gnatcatcher nest observed within the quarry expansion area.

ATTACHMENT 3

CALIFORNIA NATURAL DIVERSITY DATABASE RESULTS

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Harper Canyon (3311612) OR Borrego Mountain SE (3311611) OR Harpers Well (3311518) OR Arroyo Tapiado (3211682) OR Carrizo Mtn. NE (3211681) OR Plaster City NW (3211588) OR Carrizo Mtn. (3211671) OR Painted Gorge (3211578) OR Plaster City (3211577) OR Yuha Basin (3211567) OR Coyote Wells (3211568) OR In-ko-pah Gorge (3211661))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acmispon haydonii pygmy lotus	PDFAB2A0H0	None	None	G3	S3	1B.3
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Astragalus douglasii var. perstrictus Jacumba milk-vetch	PDFAB0F303	None	None	G5T3?	S2S3	1B.2
Astragalus insularis var. harwoodii Harwood's milk-vetch	PDFAB0F491	None	None	G5T4	S2	2B.2
Astragalus sabulonum gravel milk-vetch	PDFAB0F7R0	None	None	G4G5	S2	2B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bursera microphylla little-leaf elephant tree	PDBUR01020	None	None	G4	S2	2B.3
Calliandra eriophylla pink fairy-duster	PDFAB0N040	None	None	G5	S3	2B.3
Castela emoryi Emory's crucifixion-thorn	PDSIM03030	None	None	G3G4	S2S3	2B.2
Chaenactis carphoclinia var. peirsonii Peirson's pincushion	PDAST20042	None	None	G5T2	S2	1B.3
Chaetodipus fallax pallidus pallid San Diego pocket mouse	AMAFD05032	None	None	G5T34	S3S4	SSC
Coleonyx switaki barefoot gecko	ARACD01040	None	Threatened	G4	S1	
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Croton wigginsii Wiggins' croton	PDEUP0H140	None	Rare	G2G3	S2	2B.2
Crucifixion Thorn Woodland Crucifixion Thorn Woodland	CTT75200CA	None	None	G3	S1.2	
Cylindropuntia fosbergii pink teddy-bear cholla	PDCAC0D2U0	None	None	G2	S2	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cyprinodon macularius desert pupfish	AFCNB02060	Endangered	Endangered	G1	S1	
Desert Fan Palm Oasis Woodland Desert Fan Palm Oasis Woodland	CTT62300CA	None	None	G3	S3.2	
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eucnide rupestris annual rock-nettle	PDLOA02020	None	None	G3	S1	2B.2
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphorbia abramsiana Abrams' spurge	PDEUP0D010	None	None	G4	S2	2B.2
Euphorbia arizonica Arizona spurge	PDEUP0D060	None	None	G5	S3	2B.3
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Geraea viscida sticky geraea	PDAST42020	None	None	G2G3	S2	2B.2
Gopherus agassizii desert tortoise	ARAAF01012	Threatened	Threatened	G3	S2S3	
Herissantia crispa curly herissantia	PDMAL0F010	None	None	G5	S1	2B.3
Hulsea mexicana Mexican hulsea	PDAST4Z050	None	None	G3G4	S1	2B.3
Ipomopsis effusa Baja California ipomopsis	PDPLM060U0	None	None	G3?	SH	2B.1
Ipomopsis tenuifolia slender-leaved ipomopsis	PDPLM060J0	None	None	G3	S2	2B.3
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Linanthus maculatus ssp. emaculatus Jacumba Mountains linanthus	PDPLM041Y2	None	None	G2T1	S1	1B.1
Lithobates yavapaiensis lowland leopard frog	AAABH01250	None	None	G4	SX	SSC
Lupinus albifrons var. medius Mountain Springs bush lupine	PDFAB2B1J5	None	None	G4T3	S2	1B.3
Lycium parishii Parish's desert-thorn	PDSOL0G0D0	None	None	G3?	S1	2B.3
Malperia tenuis brown turbans	PDAST67010	None	None	G4?	S2?	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Matelea parvifolia spear-leaf matelea	PDASC0A0J0	None	None	G5	S3	2B.3
Mentzelia hirsutissima hairy stickleaf	PDLOA030K0	None	None	G4	S3	2B.3
Mentzelia tricuspis spiny-hair blazing star	PDLOA031T0	None	None	G4	S2	2B.1
Mesquite Bosque Mesquite Bosque	CTT61820CA	None	None	G3	S2.1	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nemacaulis denudata var. gracilis slender cottonheads	PDPGN0G012	None	None	G3G4T3?	S2	2B.2
Neotoma albigula venusta Colorado Valley woodrat	AMAFF08031	None	None	G5T3T4	S1S2	
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Opuntia wigginsii Wiggins' cholla	PDCAC0D1P0	None	None	G3?Q	S1?	3.3
Ovis canadensis nelsoni pop. 2 Peninsular bighorn sheep DPS	AMALE04012	Endangered	Threatened	G4T3Q	S1	FP
Panicum hirticaule ssp. hirticaule roughstalk witch grass	PMPOA4K170	None	None	G5T5	S2	2B.1
Petalonyx linearis narrow-leaf sandpaper-plant	PDLOA04010	None	None	G4	S3?	2B.3
Pholistoma auritum var. arizonicum Arizona pholistoma	PDHYD0D011	None	None	G5T4?	S3	2B.3
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Phrynosoma mcallii flat-tailed horned lizard	ARACF12040	None	None	G3	S2	SSC
Pilostyles thurberi Thurber's pilostyles	PDRAF01010	None	None	G5	S4	4.3
Polioptila melanura black-tailed gnatcatcher	ABPBJ08030	None	None	G5	S3S4	WL
Pseudorontium cyathiferum Deep Canyon snapdragon	PDSCR2R010	None	None	G4G5	S1	2B.3
Selaginella eremophila desert spike-moss	PPSEL010G0	None	None	G4	S2S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sigmodon hispidus eremicus Yuma hispid cotton rat	AMAFF07013	None	None	G5T2T3	S2	SSC
Streptanthus campestris southern jewelflower	PDBRA2G0B0	None	None	G3	S3	1B.3
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Teucrium cubense ssp. depressum dwarf germander	PDLAM20032	None	None	G4G5T3T4	S2	2B.2
Toxostoma lecontei Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC
Transmontane Alkali Marsh Transmontane Alkali Marsh	CTT52320CA	None	None	G3	S2.1	
Uma notata Colorado Desert fringe-toed lizard	ARACF15020	None	None	G3	S2	SSC
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xylorhiza orcuttii Orcutt's woody-aster	PDASTA1040	None	None	G3?	S2	1B.2

Record Count: 70

ATTACHMENT 4
SPECIES LIST

Scientific Name	**Common Name**	**Project Component**		
		Quarry Expansion Area	**Replacement pipeline route**	**New pipeline route**
Filicales	**Fern families**			
Cheilanthes parryi	Parry's lip fern	x		
Dicotyledons				
ACANTHACEAE	ACANTHUS FAMILY			
Justicia californica	Chuparosa			x
AMARANTHACEAE	AMARANTH FAMILY			
Amaranthus fimbriatus	Fringed amaranth	x		
Tidestromia suffruticosa var. *oblongifolia*	Honeysweet	x	x	x
APOCYNACEAE	DOGBANE FAMILY			
Asclepias albicans	White-stemmed milkweed	x		
Asclepias subulata	rush milkweed	x		
Funastrum hirtellum	trailing townula	x	x	
APODANTHACEAE	STEMSUCKER FAMILY			
** *Pilostyles thurberi*	Thurber's pilostyles		x	
ASTERACEAE	ASTER FAMILY			
Adenophyllum porophylloides (Dyssodia poryphylloides)	San Felipe dyssodia	x		
Ambrosia dumosa	White bur-sage, burrobush	x	x	x
Ambrosia salsola (Hymenoclea salsola)	Common burrobrush, cheesebush	x	x	x
Baileya pleniradiata	Woolly desert-marigold		x	
Bebbia juncea var. aspera	Sweetbush	x	x	
Calycoseris wrightii	white tackstem	x		
Chaenactis carphoclinia	Pebble pincushion	x	x	
Chaenactis stevioides (?)	Desert pincushion	x		
Dicoria canescens	Desert dicoria	x	x	
Encelia farinosa	Brittlebush	x		x
Encelia frutescens	Rayless encelia	x	x	x
Geraea canescens	Hairy desert sunflower	x	x	x
Gutierrezia sp.	Unid. matchweed	x		
Isocoma acradenia var. *eremophila*	Alkali goldenbush		x	x
* *Lactuca serriola*	Prickly lettuce	x		x
Malacothrix glabrata	Desert dandelion	x		
** *Malperia tenuis*	Brown turbans	x	x	
Monoptilon bellioides	Desert star	x		
Palafoxia arida var. arida	Spanish needles	x	x	x
Pectis papposa var. papposa	Chinch-weed	x		
Perityle emoryi	Emory's rock daisy	x	x	
Peucephyllum schottii	Pygmy-cedar	x		
Pleurocoronis pluriseta	Arrowleaf	x		
Pluchea sericea	Arrowweed	x		x
Prenanthella exigua	Brightwhite	x		

	Psathrotes ramosissima	Turtleback	x	x	
	Rafinesquia neomexicana	Desert chicory	x		
	Senecio mohavensis	Mojave ragwort groundsel	x		
*	*Sonchus oleraceus*	Common sow thistle	x		
	Stephanomeria pauciflora var. *pauciflora*	Wire-lettuce, desert straw	x	x	x
	Stylocline micropoides	Desert neststraw	x		
	Trichoptilium incisum	Yellow head	x		
BIGNONIACEAE		TRUMPET-CREEPER FAMILY			
	Chilopsis linearis ssp. arcuata	Desert-willow	x	x	
BORAGINACEAE		BORAGE FAMILY			
	Cryptantha angustifolia	Panamint cryptantha	x	x	x
	Cryptantha barbigera	Bearded cryptantha	x		
**	*Cryptantha holoptera*	Winged cryptantha	x		
	Cryptantha maritima	Guadalupe cryptantha	x	x	
	Cryptantha sp.	Unid. annual cryptantha	x		
	Emmenanthe penduliflora	Whispering bells	x		
	Pectocarya heterocarpa	Mixed-nut pectocarya	x		
	Pectocarya platycarpa	Wide-toothed pectocarya	x		
	Pectocarya recurvata	Arched-nut pectocarya	x		
	Phacelia crenulata	Cleftleaf phacelia	x		
	Phacelia crenulata var. *minutiflora*	Cleftleaf wildheliotrope	x		
	Phacelia distans	Distant phacelia	x		
	Phacelia pedicellata	Specter phacelia	x		
	Phacelia sp.	Unid. phacelia		x	
	Tiquilia palmeri	Palmer's tiquilia	x	x	x
	Tiquilia plicata	Fanleaf crinklemat	x	x	x
BRASSICACEAE		MUSTARD FAMILY			
*	*Brassica tournefortii*	Sahara mustard	x	x	x
	Caulanthus lasiophyllus	California mustard	x		
	Draba cuneifolia	Sonora draba	x		
	Lepidium lasiocarpum	Shaggyfruit pepperweed	x	x	
**	*Lyrocarpa coulteri* var. *palmeri*	Coulter's lyrepod	x		
CACTACEAE		CACTUS FAMILY			
	Cylindropuntia echinocarpa	Silver cholla	x	x	x
	Cylindropuntia ramosissima	Pencil cholla	x		
**	*Cylindropuntia wolfii*	Wolf's cholla	x		
	Ferocactus cylindraceus	California barrel cactus	x	x	
	Mammillaria tetrancistra	Fishhook cactus	x		
	Opuntia basilaris var. *basilaris*	Beavertail cactus	x		
CAMPANULACEAE		BELLFLOWER FAMILY			
	Nemacladus tenuis	Desert nemacladus	x		
CARYOPHYLLACEAE		PINK FAMILY			
	Achyronychia cooperi	Onyx flower		x	
CHENOPODIACEAE		GOOSEFOOT FAMILY			
	Atriplex canescens	Four-wing saltbush			x
	Atriplex hymenelytra	Desert holly			x
	Atriplex polycarpa	Allscale saltbush			x

Salsola tragus	Russian thistle		x	
Suaeda nigra	Bush seepweed	x		x
CONVOLVULACEAE	MORNING-GLORY FAMILY			
Cuscuta sp.	Dodder	x		
CUCURBITACEAE	CUCUMBER FAMILY			
Cucurbita palmata	Coyote melon	x		x
EPHEDRACEAE	EPHEDRA FAMILY			
Ephedra aspera	Rough jointfir	x	x	x
Ephedra californica (?)	Desert tea, California ephedra		x	
EUPHORBIACEAE	SPURGE FAMILY			
Croton californicus	California croton		x	
Ditaxis lanceolata	Narrow-leaved ditaxis	x		x
Ditaxis neomexicana	Common ditaxis	x		
Euphorbia polycarpa	Smallseed sandmat	x	x	x
Euphorbia setiloba	Yuma sandmat, Yuma spurge	x	x	x
Stillingia spinulosa	Annual stillingia	x	x	x
FABACEAE	LEGUME FAMILY			
Acmispon strigosus	Strigose lotus	x		
Dalea mollissima	Rust dalea	x		x
Hoffmannseggia microphylla	Small-leaved caesalpinia	x	x	x
Lupinus arizonicus	Arizona lupine	x		
Parkinsonia aculeata	Mexican palo verde			x
Parkinsonia florida	Blue palo verde	x		
Prosopis glandulosa var. *torreyana*	Honey mesquite, mesquite	x		x
Psorothamnus emoryi	Emory indigo-bush, dye-weed	x	x	x
Psorothamnus schottii	Indigo-bush	x	x	x
Psorothamnus spinosus	Smoke tree	x	x	x
Senegalia greggii (Acacia greggii)	Catclaw, catclaw acacia	x	x	x
FOUQUIERIACEAE	OCOTILLO FAMILY			
Fouquieria splendens ssp. *splendens*	Ocotillo	x	x	x
KRAMERIACEAE	RHATANY FAMILY			
Krameria bicolor (K. grayi)	White rhatany	x	x	x
LAMIACEAE	MINT FAMILY			
Condea emoryi (Hyptis emoryi)	Desert lavender	x	x	
LOASACEAE	LOASA FAMILY, STICK-LEAF FAMILY			
Eucnide rupestris	Rock nettle	x		
Mentzelia involucrata	Sand blazing star	x	x	
Mentzelia sp.	Unid. annual	x		
** *Petalonyx linearis*	Narrow leaved sandpaper-plant	x		
Petalonyx thurberi ssp. *thurberi*	Sandpaper-plant	x	x	x
MALVACEAE	MALLOW FAMILY			
Eremalche rotundifolia	Desert fivespot	x		
Hibiscus denudatus	Paleface	x		

Sphaeralcea ambigua	Apricot mallow	x		
NYCTAGINACEAE	FOUR O'CLOCK FAMILY			
Abronia villosa var. *villosa*	Sand verbena	x	x	
Allionia incarnata var. *villosa*	Trailing windmills	x		x
Boerhavia coccinea (?)	Scarlet spiderling, red ringstem	x		
Boerhavia wrightii	Wright's boerhavia	x		
Mirabilis laevis	Desert wishbone bush	x		
ONAGRACEAE	EVENING-PRIMROSE FAMILY			
Chylismia brevipes ssp. *brevipes (Camissonia brevipes)*	Desert primrose		x	
Chylismia cardiophylla (Camissonia cardiophylla)	Heart-leaved camissonia	x		
Chylismia claviformis (Camissonia claviformis)	Clavate evening primrose	x		
Chylismia claviformis ssp. peirsonii (Camissonia claviformis var. peirsonii)	Peirson's yellow evening primrose	x	x	
Eremothera boothii ssp. *condensata (Camissonia boothii ssp. condensata)*	Desert lantern	x	x	
Eremothera refracta (Camissonia refracta)	Refracted desert primrose	x		
Eulobus californica (Camissonia californica)	California false mustard	x		
Oenothera deltoides	Birdcage evening primrose	x		
PAPAVERACEAE	POPPY FAMILY			
Argemone munita	Chicalote, prickly poppy	x	x	
Eschscholzia glyptosperma	Desert poppy	x	x	
Eschscholzia minutiflora	Pygmy poppy	x	x	
Eschscholzia parishii	Parish's gold poppy	x		
PLANTAGINACEAE	PLANTAIN FAMILY			
Mimulus bigelovii	Bigelow's monkeyflower	x		
Mohavea confertiflora	Ghost flower	x		
Plantago ovata	Desert plantain	x	x	x
POLEMONIACEAE	PHLOX FAMILY			
Aliciella latifolia	Broadleaf gilia	x	x	
Gilia sp.	Gilia	x		
Langloisia setosissima var. *setosissima*	Great Basin langloisia	x	x	
Loeseliastrum matthewsii	Desert calico	x	x	
Loeseliastrum schottii	Schott's langloisia	x	x	
POLYGONACEAE	BUCKWHEAT FAMILY			
Chorizanthe brevicornu	Brittle spineflower	x	x	
Chorizanthe corrugata	Wrinkled spineflower	x	x	
Chorizanthe rigida	Devil's spineflower	x	x	x
Eriogonum deflexum var. deflexum	Skeleton weed	x	x	

	Eriogonum deflexum var. rectum	Flat-crowned buckwheat	x		
	Eriogonum inflatum	Desert trumpet	x	x	
	Eriogonum thomasii	Thomas' wild buckwheat	x	x	
	Eriogonum trichopes	Little desert trumpet	x		
RESEDACEAE		MIGNONETTE FAMILY			
	Oligomeris linifolia	Narrowleaf oligomeris	x	x	
SOLANACEAE		NIGHTSHADE FAMILY			
	Datura discolor	Jimsonweed	x	x	
	Datura wrightii	Jimsonweed, tolguacha			x
	Lycium andersonii	Boxthorn	x		
	Nicotiana obtusifolia	Desert tobacco	x		x
	Physalis crassifolia	Thick-leaf ground-cherry	x	x	
TAMARICACEAE		TAMARISK FAMILY			
*	*Tamarix aphylla*	Athel	x		x
*	*Tamarix ramosissima*	Saltcedar, tamarisk	x		x
VISCACEAE		MISTLETOE FAMILY			
	Phoradendron californicum	Desert mistletoe	x		
ZYGOPHYLLACEAE		CALTROP FAMILY			
	Fagonia laevis	Smooth-stem fagonia	x		
	Fagonia pachyacantha	Glandular fagonia	x	x	x
	Kallstroemia californica	California caltrop			x
	Larrea tridentata	Creosote bush	x	x	x
Monocotyledons					
AGAVACEAE		CENTURY PLANT FAMILY			
	Agave deserti	Desert agave	x		x
	Hesperocallis undulata	Desert lily		x	
POACEAE		GRASS FAMILY			
	Aristida adscensionis	Sixweeks three-awn grass	x	x	x
	Aristida purpurea	Three-awn grass	x		
	Bouteloua aristidoides var. *aristidoides*	Needle grama	x		
	Bouteloua barbata var. *barbata*	Sixweeks grama	x		
*	*Bromus madritensis* ssp. *rubens*	Red brome	x		
	Cynodon dactylon	Bermuda grass			x
	Dasyochloa pulchella	Low fluffgrass	x		
*	*Festuca myuros*	Rattail sixweeks grass	x		
	Hilaria rigida	Big galleta	x	x	x
	Schismus barbatus	Mediterranean grass	x	x	x
*	*Sorghum bicolor*	Sorghum	x		
*	*Sorghum halepense*	Johnson grass	x		
	Stipa speciosa	Desert needle grass		x	
TYPHACEAE		CATTAIL FAMILY			
	Typha sp.	cattails			x

Scientific Name	Common Name	Project Component		
VERTEBRATE ANIMALS		**Quarry Expansion Area**	**Replacement pipeline route**	**New pipeline route**
REPTILIA	REPTILES	x	x	x
IGUANIDAE	IGUANID LIZARDS	x	x	x
Dipsosaurus dorsalis	Desert iguana	x	x	x
Callisaurus draconoides	Zebra-tailed lizard	x	x	
Uta stansburiana	Side-blotched lizard	x	x	x
Phrynosoma platyrhinos	Desert horned lizard		x	
TEIIDAE	WHIPTAILS	x	x	
Aspidoscelis tigris tigris	Great Basin whiptail	x	x	
VIPERIDAE	VIPERS		x	
Crotalus cerastes	Sidewinder		x	
AVES	BIRDS		x	
COLUMBIDAE	PIGEONS AND DOVES		x	
* *Streptopelia decaocto*	Eurasian collared dove		x	
Zenaida macroura	Mourning dove	x	x	
STRIGIDAE	TYPICAL OWLS	x		
Bubo virginianus	Great horned owl	x		
** *Speotyto cunicularia*	Burrowing owl	x		
TROCHILIDAE	HUMMINGBIRDS	x		
Calypte anna	Anna's hummingbird	x		
Calypte costae	Costa's hummingbird	x		
TYRANNIDAE	TYRANT FLYCATCHERS		x	
Sayornis saya	Say's phoebe		x	
Myiarchus cinerascens	Ash-throated flycatcher		x	
CORVIDAE	CROWS AND JAYS		x	
Corvus corax	Common raven		x	
REMIZIDAE	VERDINS	x	x	x
Auriparus flavipes	Verdin	x	x	x
TROGLODYTIDAE	WRENS			
Salpinctes obsoletus	Rock wren	x		
MUSCICAPIDAE	THRUSHES AND ALLIES	x		
** *Polioptila melanura*	Black-tailed gnatcatcher	x		
PTILOGONATIDAE	SILKY FLYCATCHERS	x		
Phainopepla nitens	Phainopepla	x		
LANIIDAE	SHRIKES	x		
** *Lanius ludovicianus*	Loggerhead shrike	x		
FRINGILLIDAE	FINCHES	x	x	x
Carpodacus mexicanus	House finch	x	x	x
MAMMALIA	MAMMALS	x		
LEPORIDAE	HARES AND RABBITS	x		
Lepus californicus	Black-tailed hare	x		
HETEROMYIDAE	POCKET MICE	x		
Dipodomys sp.	Kangaroo rat	x		

CRICETIDAE	RATS AND MICE	x
Neotoma lepida intermedia	San Diego desert woodrat	x
CANIDAE	FOXES, WOLVES AND COYOTES	
Canis latrans	Coyote	x
FELIDAE	CATS	x
Lynx rufus	Bobcat	x
BOVIDAE	SHEEP AND GOATS	x
Ovis canadensis nelsoni	Peninsular bighorn sheep	x

This list includes species observed or detected on the project site. Non-native species are indicated by an asterisk. Special Status species indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.). Taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

ATTACHMENT 5
SPECIAL-STATUS SPECIES NOT ADDRESSED

Attachment 5. Special-status Species Not Addressed in the Report.

Scientific Name	Common Name	Reason for Exclusion
PLANTS		
Astragalus douglasii var. *perstrictus*	Jacumba milk-vetch	Below elevation range
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	Well outside of geographic range.
Ayenia compacta	Ayenia	Well outside of geographic range.
Colubrina californica	Las Animas colubrina	Well outside of geographic range.
Condalia globosa var. *pubescens*	Spiny abrojo	Well outside of geographic range.
Coryphantha alversonii	Alverson's foxtail cactus	Well outside of geographic range.
Croton wigginsii	Wiggins' croton	Well outside of geographic range.
Cylindropuntia fosbergii	Pink teddy-bear cholla	Well outside of geographic range.
Delphinium parishii ssp. *subglobosum*	Colorado Desert larkspur	Well below elevation range
Ditaxis claryana	Glandular ditaxis	Well outside of geographic range.
Eryngium aristulatum var. *parishii*	San Diego button-celery	No suitable vernal pool habitat
Geraea viscida	Sticky geraea	No suitable habitat and below elevation range
Herissantia crispa	Curly herissantia	Locally rare, below elevation range
Hulsea mexicana	Mexican hulsea	No suitable habitat
Ipomopsis effusa	Baja California ipomopsis	Well outside of geographic range.
Linanthus maculatus ssp. *emaculatus*	Jacumba Mountains linanthus	Well outside of geographic range.
Matelea parvifolia	Spear-leaf matelea	Well below elevation range.
Mentzelia tricuspis	Spiny-hair blazing star	Well outside of geographic range, most records in vicinity are misidentified *M. hirsutissima.*
Nama stenocarpa	Mud nama	No suitable aquatic habitat.
Opuntia wigginsi	Wiggins cholla	Margin of geographic range
Panicum hirticaule ssp. *hirticaule*	Roughstalk witch grass	Well outside of geographic range.
Penstemon clevelandii var. *connatus*	San Jacinto Mountain penstemon	Well below elevation range.
Penstemon thurberi	Thurber's beardtongue	Well below elevation range.
Pseudorontium cyathiferum *(Antirrhinum cyathiferum)*	Deep Canyon snapdragon	Well outside of geographic range.
Rhus aromatica var. *simplicifolia* *(Rhus trilobata* var. *simplicifolius)*	Single-leaved skunkbrush	Well below elevation range.
Salvia eremostachya	Desert sage	Below elevation range, margin of geographic range
Salvia greatae	Orocopia sage	Well outside of geographic range.
Stemodia durantifolia	Purple stemodia	No suitable habitat
Streptanthus campestris	Southern jewelflower	Well below elevation range and no suitable habitat.
Symphyotrichum defoliatum	San Bernardino aster	No suitable wetland or marsh habitat.
AMPHIBIANS		
Lithobates yavapaiensis	Lowland leopard frog	No suitable aquatic habitat
REPTILES		

Scientific Name	Common Name	Reason for Exclusion
Arizona elegans occidentalis	California glossy snake	Outside of geographic range. This is a coastal subspecies that reaches In-ko-pah Gorge where it integrates within the desert subspecies (*A. e. eburnata*).
Crotalus ruber ruber	Northern red diamond rattlesnake	East of geographic range.
Gopherus agassizii	Desert tortoise	Well outside of geographic range
Phrynosoma blainvillii	Coast horned lizard	Well outside of geographic range
BIRDS		
Empidonax traillii extimus	Southwestern willow flycatcher	No suitable riparian habitat
Laterallus jamaicensis coturniculus	California black rail	No suitable wetland habitat
Pyrocephalus rubinus	Vermilion flycatcher	No suitable riparian habitat.
Toxostoma crissale	Crissal thrasher	No suitable riparian habitat.
Vireo bellii pusillus	Least Bell's vireo	No suitable riparian habitat
Junco hyemalis caniceps	California gray-headed junco	Well outside of geographic range, no suitable habitat.
MAMMALS		
Neotoma lepida intermedia	San Diego desert woodrat	Well outside of geographic range.
Sigmodon hispidus eremicus	Yuma hispid cotton rat	No suitable wetland or grassland habitat.

ATTACHMENT 6

CALIFORNIA NATURAL DIVERSITY DATABASE COMPLETED FORMS

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form Print Form

California Native Species Field Survey Form

Scientific Name: *Eucnide rupestris*

Common Name: Annual rock-nettle

Species Found? ● Yes ○ No ____ If not found, why?

Total No. Individuals: 28 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5667 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology: 25 % vegetative 75 % flowering ____ % fruiting

Animal Information

____ # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, gypsum deposits southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carizzo Mountain NE, Borrego Mountain SE Elevation: 590-800 ft.

T 13S R 9E Sec 33, ____ ¼ of ____ ¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T 14S R 9E Sec 4, ____ ¼ of ____ ¼, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587470.46 mE, 3652023.18 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Plants growing on north-facing slopes of gypsum outcrops. Growing on nearly vertical canyon walls and sporatic plants also observed in wash downstream. Total of 28 plants observed at approximately 15 locations in the upper wash, GPS point is for the downstream-most plants

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ____

Comments:

Determination: *(check one or more, and fill in blanks)*
☒ Keyed (cite reference): Baldwin et al, 2012
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☒

May we obtain duplicates at our expense? ● yes ○ no

Mail to:
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California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code:		Quad Code:	
Elm Code:		Occ No.:	
EO Index:		Map Index:	

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Malperia tenuis*

Common Name: Brown turbans

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: >30 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5656 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

% vegetative	% flowering	% fruiting
	100	

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 590 ft.

T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587835.94 m E, 3652121.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats:

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☒ Keyed (cite reference): Baldwin et al, 2012
- ☐ Compared with specimen housed at:
- ☐ Compared with photo / drawing in:
- ☐ By another person (name):
- ☐ Other:

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Cryptantha holoptera*

Common Name: Winged cryptantha

Species Found? ● Yes ○ No ____ If not found, why?

Total No. Individuals: –12 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5665 Number ____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

% vegetative	% flowering	% fruiting
	100	

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

***Location Description** (please attach map AND/OR fill out your choice of coordinates, below)*

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 520 ft.

T 13S R 9E Sec 33 , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587217.92 m E, 3652213.39 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on sandy alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ____

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☒ Keyed (cite reference): Baldwin et al, 2012
- ☐ Compared with specimen housed at: ____
- ☐ Compared with photo / drawing in: ____
- ☐ By another person (name): ____
- ☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code:	Quad Code:
Elm Code:	Occ No.:
EO Index:	Map Index:

Date of Field Work (mm/dd/yyyy): 04/06/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Cylindropuntia wolfii*

Common Name: Wolf's opuntia

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: >50 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 515 (Number) (Michelle Cloud-Hughes) (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

% vegetative	% flowering	% fruiting
100		

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 750 ft.

T 14S R 9E Sec 4 , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 588327.12 m E, 3650406.25 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Large population of plants in the upper end of the wash, primarilly on alluvial terraces and benches.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats:

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference):
- ☐ Compared with specimen housed at:
- ☐ Compared with photo / drawing in:
- ☒ By another person (name): Michelle Cloud-Hughes
- ☐ Other:

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lyrocarpa coulteri*

Common Name: Coulter's lyrepod

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology: 100 % vegetative ______ % flowering ______ % fruiting

Animal Information

______ # adults ______ # juveniles ______ # larvae ______ # egg masses ______ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, narrow side canyon that flows from mountains to the east. Southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 600 ft.

T 13S R 9E Sec 33 , ______ 1/4 of ______ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ______ R ______ Sec ______, ______ 1/4 of ______ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587872.29 m E, 3652241.62 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Single plant growing in sandy substarte at the base of a large bedrock outcrop on south side of canyon.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ______

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☒ Keyed (cite reference): Baldwin et al, 2012
- ☐ Compared with specimen housed at: ______
- ☐ Compared with photo / drawing in: ______
- ☐ By another person (name): ______
- ☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Pilostyles thurberi*

Common Name: Thurber's pilostyles

Species Found? ● Yes ○ No ____ If not found, why?
Total No. Individuals: –5 Subsequent Visit? ○ Yes ● No
Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.
Collection? If yes: 5653 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology: ____ % vegetative 100 % flowering ____ % fruiting

Animal Information
____ # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Lower Borrego Valley, south of Fish Creek Wash, along north side of US Gypsum railroad and unpaved road.

County: Imperial Landowner / Mgr: Unknown
Quad Name: Borrego Mountain SE Elevation: 80 ft.
T 13S R 9E Sec 16 , SE 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● ***OR*** Geographic (Latitude & Longitude) ○
Coordinates: 588226.11 m E, 3655951.59 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Small patch of plants growing on Psorothamnus emoryi in sandy substrates.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Natural lands to north, railroad and unpaved road to south.
Visible disturbances: Shooting and offroad vehciles use in area.
Threats: ____
Comments:

Determination: *(check one or more, and fill in blanks)*
☒ Keyed (cite reference): Baldwin et al, 2012
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Ovis canadensis nelsoni*

Common Name: Peninsular bighorn sheep

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

% vegetative	% flowering	% fruiting

Animal Information

	1			
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Carrizo Mountain NE Elevation: 770 ft.
T 14S R 9E Sec 4 , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○
Coordinates: 588629.00 m E, 3650409.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Skeletal remains of a possible juvenile bighorn sheep observed in upper wash, near where wash turns to an easterly direction. Bighorn sheep tracks abundant throughout upper wash. No evidence of bighorn sheep using gypsum outcrops but evidence of moderate use of washes. Bighorn sheep tracks also observed further down the wash in 2014 when sheep were observed drinking water from a quarry pit that filled with water following significant floods in the area. The water has since dried up and sheep are no longer observed in the quarry pit.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: ______
Comments:

Determination: *(check one or more, and fill in blanks)*

- ☐ Keyed (cite reference): ______
- ☐ Compared with specimen housed at: ______
- ☐ Compared with photo / drawing in: ______
- ☐ By another person (name): ______
- ☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 10/30/2014

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing owl

Species Found? ● Yes ○ No ______ If not found, why?
Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No
Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☒ Unk.
Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology: ______ % vegetative ______ % flowering ______ % fruiting

Animal Information
1 # adults ______ # juveniles ______ # larvae ______ # egg masses ______ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***
Fish Creek Mountains, gypsum outcrops just southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Borrego Mountain SE Elevation: 580 ft.
T 13S R 9E Sec 29 , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ○ Horizontal Accuracy: ______ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● ***OR*** Geographic (Latitude & Longitude) ○
Coordinates: 586847.00 m E, 3653026.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

A single wintering burrowing owl observed on a gypsum deposit. No burrow observed at the location of the owl but suitable burrows are present in the vicinity.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: ______
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ______
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: 2 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Justin M. Wood

Address: 615 N. Benson Ave., Upland, CA 91786

E-mail Address: Jwood@aspeneg.com

Phone: (909) 568-5235

Plant Information

Phenology: ______ % vegetative ______ % flowering ______ % fruiting

Animal Information

2				
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 625 ft.

T 13S R 9E Sec 33, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 587621.39 m E, 3651698.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two loggerhead shrikes observed in broad alluvial wash. No nest observed but probable in the area.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ______

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): ______
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ● no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only

Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Polioptila melanura*

Common Name: Black-tailed gnatcatcher

Species Found? ● Yes ○ No ____ If not found, why?

Total No. Individuals: 6 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ____ Number ____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

____ % vegetative ____ % flowering ____ % fruiting

Animal Information

2	4			
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 625 ft.

T 13S R 9E Sec 33 , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587693.61 m E, 3651483.41 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Nest with four juvenile birds observed in a desert lavender (Condea emoryi) shrub in small wash just west of the main wash. Both adults were in the area and scoulded the biologist upon approaching the nest.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ____

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): ____
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

APPENDIX L-1
TAMARISK REMOVAL PLAN

Appendix L-1
Yuha Basin ACEC Tamarisk Removal Plan

Introduction

This document presents a proposal to remove tamarisk trees in the Yuha Basin Area of Critical Environmental Concern (ACEC), located within the El Centro Field Office of the California Desert District of the Bureau of Land Management. The removal is proposed to mitigate impacts to the ACEC associated with the U.S. Gypsum Mine Expansion/Modernization project (U.S. Gypsum project) currently under consideration for a right-of-way grant, in conformance with Mitigation Measure 3.4-13 of the Supplemental Environmental Impact Statement (SEIS). The project proposes to replace an existing water line and some project alternatives include construction of a new one within the boundaries of the ACEC. The ACEC location, the proposed replacement water line, and the potential new line are shown on Figure 1.

The ACEC includes habitat for the flat-tailed horned lizard and several unique vegetation communities, and provides biological connectivity between the Jacumba Wilderness, the Ocotillo Conservation Lands, and Anza- Borrego Desert State Park. In combination these lands preserve one of the most intact and diverse landscapes in the Sonoran/Colorado Desert. The ACEC contains important cultural resources such as Paleoindian sites, campsites of ancestors of living Kumeyaay, Quechan, and Cocopah Indians, and habitation sites at the shoreline of ancient Lake Cahuilla. The ACEC also contains historic sites such as those related to mining, the Old Stage Road, and a historic railroad. It includes a portion of the Juan Batista de Anza National Historic Trail and one of the Anza campsites (Yuha Well). Paleontological localities are also included in the ACEC, including the Oyster Shell Beds, the relatively undisturbed Lake Cahuilla sediments, and the Palm Springs Group.

Management goals within the ACEC are to protect cultural, ecological, and recreational values while providing for other compatible uses. BLM established a limit on the amount of surface disturbance permitted in the ACEC through an amendment to the land use plan by which the BLM manages this area[1]. Disturbance in the Yuha ACEC is limited to 1% of the surface area. This disturbance cap has been exceeded; therefore new disturbance due to the proposed project must be mitigated.

Tamarisk Characteristics

Athel tamarisk (*Tamarix aphylla*), also called athel or saltcedar, is known to occur within the Yuha Desert ACEC along the eastern portion of the Yuha Wash, shown in Figure 1. Tamarisk in this area tend to be larger trees like the one shown in Figure 2. They are somewhat spaced out on the landscape as shown in Figure 3, in which many of the darker spots along the wash are tamarisk trees.

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[1] Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA), 2016.

YUHA BASIN ACEC TAMARISK REMOVAL
US Gypsum Company Expansion and Modernizaton Projecti

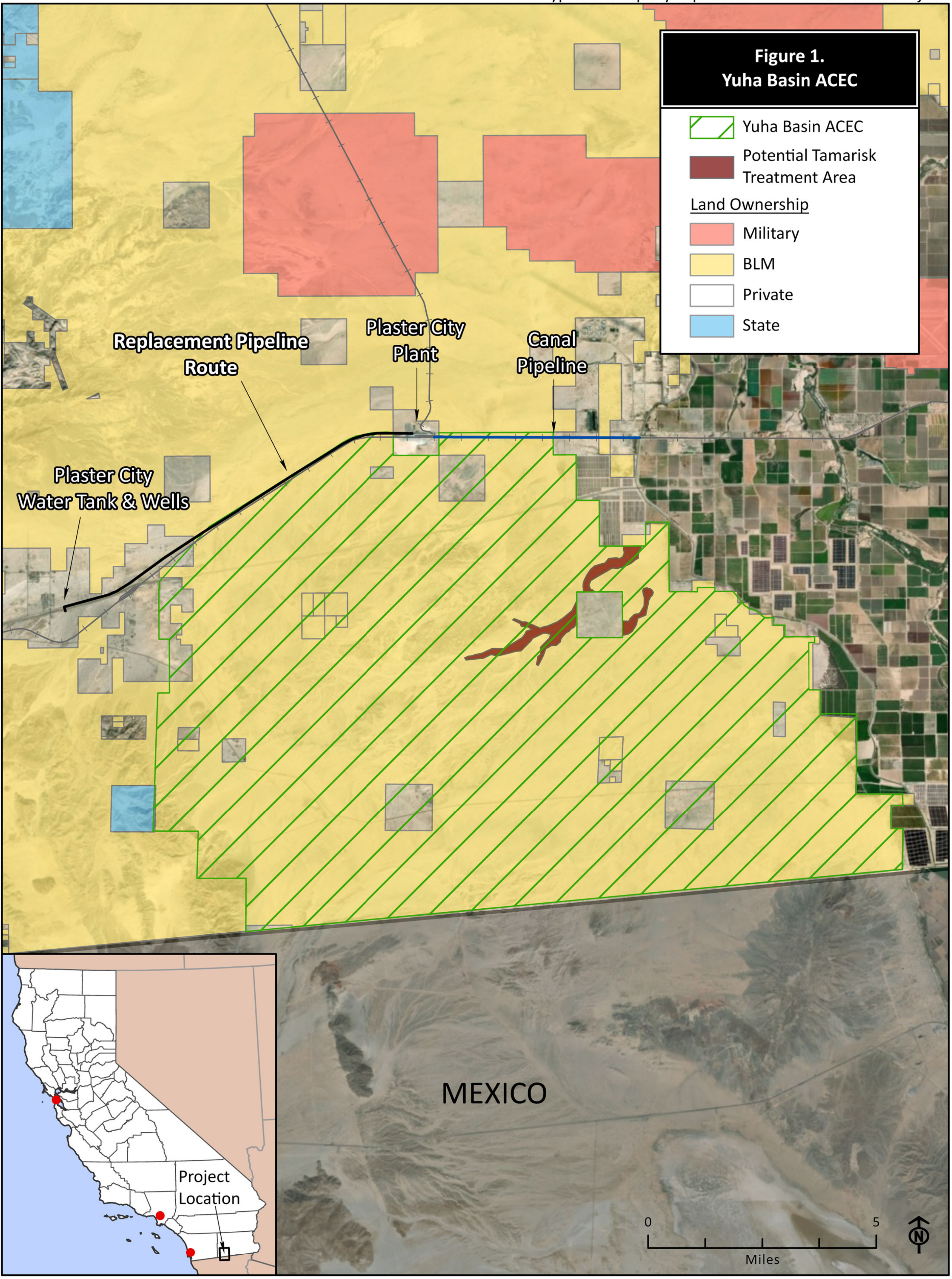

Figure 1.
Yuha Basin ACEC

Data Sources: BLM, 2016; ESRI, 2018

April 2019

Figure 2: Athel Tamarisk *(Tamarix aphylla)*

Figure 3: Aerial view of tamarisk on Yuha Wash

Tamarisk is a non-native, invasive species that grows on arid land streambanks, sandbars, lake margins, and saline environments (CalIPC 2018). It takes up salts through its roots and salinates surface soils by both salty litterfall and salt drip. It also creates dense shade and litter cover beneath its canopy, excluding other plants. Athel tamarisk is native to Eurasia and Africa and was introduced into the western United States as an ornamental tree in the early 1800s. It occurs throughout the western and central United States but is most problematic in the Southwest.

The flowering season for athel tamarisk is during spring and summer, extending into fall. All species of tamarisk produce thousands of small flowers. Their seeds mature during the cold season after the flowers close and wilt; each seed is very small with a tuft of hairs allowing wind dispersal. The trees can produce hundreds of thousands of seeds in a year. These seeds are typically short-lived and must reach a suitable location and germinate within a few months after dispersal. Tamarisk removal could cause inadvertent seed dispersal if cutting and transporting the material introduces tamarisk seed into suitable habitat areas where it does not already occur. However, this will be minimized to the extent feasible by covering the material during transport. Additionally, the effect of removing tamarisk trees will remove long-term seed sources, thus reducing overall tamarisk seed production and seedfall within the ACEC.

Tamarisk Treatment Plan

Under this plan, new ground disturbance within the ACEC resulting from the U.S. Gypsum project would be mitigated by removing athel tamarisk trees from the ACEC along the Yuha Wash. BLM has identified about 747 acres along Yuha Wash where athel tamarisk occurs in an open woodland. Removing the tamarisk would improve habitat conditions for native plants, and would remove the seed source for further tamarisk spread. This would support the ACEC management goals by protecting or improving ecological values while supporting the water line construction as a compatible use.

Areas to be treated. DRECP requires a ratio of 1.5:1 for addressing surface disturbance in an ACEC where the disturbance cap is already exceeded before a project is initiated. That is, for each acre of new surface disturbance in the ACEC from the project, all the tamarisk occurring within an area of 1.5 acres will be removed, and that will count as 1.5 acres mitigated. The acreage of anticipated disturbance within the ACEC differs among the eight alternatives identified in the SEIS (see Table 1).

Table 1
Estimated disturbance and mitigation acreage by Alternative
(based on 30-foot estimated construction corridor width).

Alternative	Remove existing Ocotillo Pipeline	Construct New Replacement Ocotillo Pipeline	Construct New Canal Pipeline	Estimated ACEC Disturbance Acreage	Estimated Mitigation Acreage (1.5:1)
1: Proposed Action	17.9	17.9	-	35.8	53.7
2: No Action	-	-	-	-	-
3: Partial IID Water Supply	17.9	17.9	20	65.8	98.7
4: Full IID Water Supply	17.9	-	20	37.9	56.9
5 through 8: Reduced Mining Footprint Alternatives	17.9	17.9	-	35.8	53.7

Impacts of Treatment. The proposed tamarisk treatment would result in ground disturbance in the upper few inches of the soil surface from vehicle and foot traffic, and from dragging cut tamarisk material. No excavation or other ground disturbing activities would be conducted. The potential for adverse impacts of tamarisk treatment to biological resources includes the risk of damaging the nests of native birds that could be in the tamarisk trees at the time of removal, and the risk of killing or injuring special-status wildlife (e.g., flat-tailed horned lizard) that could be present along access routes or within treatment areas. These impacts can be avoided or minimized by scheduling the tamarisk treatment outside the bird nesting season as much as possible, reducing driving speeds, and using on-site biological monitoring and avoidance measures to prevent wildlife injury[2].

Pre-treatment Surveys and Monitoring. Before tamarisk removal could begin, existing tamarisk locations will be recorded with hand-held GPS units. This information would be used to identify the specific area(s) and individual trees to be treated based on the requirements described above.

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[2] Consistent with mitigation measures identified in the Biological Resources section of the Supplemental EIS, including BIO-3 (Worker Education Awareness Program) and BIO-4 (Wildlife Impact Avoidance and Minimization Measures).

USG will be responsible for all notifications, authorizations, pre-treatment surveys, and monitoring. A Pesticide Use Permit (PUP) must be issued by the BLM prior to any treatment and must be maintained throughout the treatment and subsequent 5-year monitoring period. USG should allow at least 60 days prior to planned treatment activities for BLM to process the PUP. Additionally, USG will notify the BLM Authorized Officer at least two weeks prior to initiating treatment.

A survey for cultural resources will also be conducted prior to ground disturbance and, if the survey were to indicate it, cultural resources monitoring during treatment would be conducted. Cultural surveyors must request a Fieldwork Authorization from the BLM ECFO. The request must be made at least 30 days in advance of planned field work.

Biological surveys in advance of tamarisk removal would be required only if vegetation removal work would occur during the breeding bird season. Breeding bird season is identified as beginning on January 1 for early breeding species such as hummingbirds and raptors, and continues through August 31. Breeding activity varies from year to year depending on rainfall. For example, in a dry year there may be little or no breeding activity within the treatment area so that breeding birds would not present a scheduling constraint. Similarly, summer breeding activity is likely to be completed earlier than August, except in unusually productive years. Pre-activity nesting surveys would be used to determine site specific conditions in any given year. Biological monitoring during vegetation removal work would be required.

Treatment Methods. Tamarisk removal and treatment are most effective when conducted in late summer or early fall, while the trees are most actively transporting carbohydrate from the foliage to below-ground root and stem storage. Very small seedlings would be pulled by hand, taking care to keep their roots intact. Established trees would be felled. Each tamarisk tree in the treatment area would be cut 3 to 6 inches above ground level and the cut stump would be immediately painted or sprayed with the herbicide. A cut tamarisk tree can develop roots and grow into a new tree if left on the ground where enough moisture is present; therefore, all cut material would be removed from the site and legally disposed of at a licensed facility that is not located on BLM lands.

The method of herbicide treatment would be consistent with those herbicides analyzed and approved in the BLM’s 2007 Programmatic Environmental Impact Statement (PEIS) on herbicide use[3]. Only those herbicides approved for use in California and analyzed in the PEIS would be used, and only at application methods and rates consistent with the label and the PEIS. All treatments would be supervised or overseen by a certified pesticide applicator who is knowledgeable in plant identification and familiar with proper herbicide application techniques. The University of California Weed Control and Information Center (2018) identifies several compatible herbicides and describes treatment methods, summarized below. All four are described as effective.

- Triclopyr (Garlon; several registered product names): Cut stump treatment using varying dilutions or undiluted Garlon (according to specific product formulations); best to apply

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[3] Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement, 2007.

in summer or fall when plants are still growing and not water stressed, to maximize herbicide translocation to the below-ground tissues. Apply herbicide solution to cover the outer 20% of the stump face. Basal bark treatments can be made to smaller trees with thin bark.

- Glyphosate (Roundup, Rodeo, Aquamaster; several registered product names): Undiluted. Late summer or early fall; avoid treatment under drought conditions. Glyphosate provides only partial control.
- Imazapyr (Arsenal, Habitat, Stalker, Chopper, Polaris). Ten percent concentrate applied late summer or early fall. Noted as the most widely used herbicide to control saltcedar.
- Imazapyr plus glyphosate: Used as foliar treatment; details for cut stump treatment not provided.

All cut material would be chipped and removed from the site, or hauled intact for off-site disposal. All cut or chipped tamarisk material would be covered during transport to minimize seed dispersal. The equipment used would include two 3-axle, heavy-duty trucks to transport personnel, tools, and cut or chipped tamarisk material, and to tow a mechanical chipper. Both trucks would be used to haul material off-site. Vehicle access would be on BLM-designated routes or, if necessary and only with prior BLM authorization, driving within the channel of the Yuha Wash. Vehicles would carry crews and equipment close enough to each treatment site to hand-carry cut material back to the trucks (i.e., within a few hundred feet of the trees). Additional equipment would include chainsaws, handsaws, and herbicide application equipment such as spray bottles or backpack sprayers.

Post-treatment Monitoring

After treatment, the area would be monitored twice a year for five years to monitor regrowth from cut stumps or establishment of new seedlings within the treatment areas. New tamarisk seedlings would be pulled by hand, taking care to keep their roots intact. Regrown stumps would be re-cut and treated with a new application of herbicide painted or sprayed onto the stump according to the methods described above. USG will notify the BLM Authorized Officer at least two weeks prior to initiating each monitoring effort and will submit a summary report of monitoring results and retreatment following each monitoring effort.

References

Cal-IPC (California Invasive Plant Council). 2019. Cal-IPC Inventory. Site visited January 2019. https://www.cal-ipc.org/plants/inventory/

University of California Weed Control and Information Center. 2019. Weed Report: Saltcedar and tamarisk. Site visited January 2019. https://wric.ucdavis.edu/information/natural%20areas/wr_T/Tamarix.pdf

DRECP EIR/EIS Appendix L. Yuha Basin ACEC. https://www.fws.gov/carlsbad/palmsprings/DRECP/Appendix%20L_Bureau%20of%20Land%20Management%20Worksheets/Appendix%20L_BLM%20Worksheets%20-%20ACEC_Part7_12.pdf

CABI Invasive Species Compendium: Tamarix aphylla (athel). https://www.cabi.org/isc/datasheet/52483

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APPENDIX D-2:
2016 JURISDICTIONAL DELINEATION

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JURISDICTIONAL DELINEATION
FOR
UNITED STATES GYPSUM COMPANY
PLASTER CITY
EXPANSION/MODERNIZATION PROJECT

Submitted to:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, CA 92408

Prepared by:

Hernandez Environmental Services
17037 Lakeshore Drive
Lake Elsinore, CA 92530

November 2016

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FIGURES

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EXECUTIVE SUMMARY

Hernandez Environmental Services was contracted by United States Gypsum Company (USG) to prepare a Jurisdictional Delineation for the USG Plaster City Expansion/Modernization Project. Approximate 2,080.4-acre Plaster City Quarry located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78. The proposed Plaster City Quarry Expansion/Modernization Project includes the expansion of quarrying activities to approximately 682 acres of private lands and 18.1 acres of public lands; the replacement of the existing 8-inch diameter water pipeline from USG's wells in Ocotillo to the Plant site; the installation of a new production water well, approximately 20,719 linear feet of water pipeline and power service line to serve the well pump; and, ultimately, reclamation of the disturbed areas to a state of natural open space.

Field survey of the proposed Plaster City Expansion/Modernization Project areas were conducted on April 19, 2016 through April 21, 2016. Field surveys were conducted to delineate jurisdictional drainages and wetland resources associated with jurisdictional drainages. The proposed Plaster City Expansion/Modernization Project areas contain a total of 327.55 acres of unnamed streambeds that ultimately flow into the Salton Sea. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bur-sage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

The proposed Plaster City Mine Quarry Expansion/Modernization Project areas contain approximately 327.55 acres of ephemeral drainages that fall under the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board. The proposed Plaster City Mine Quarry Expansion/Modernization Project areas contain no wetlands or vernal pools as defined by the 1987 Corps of Engineers Wetland Delineation Manual.

Full build-out of the Plaster City Quarry would result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board. Activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. United States Gypsum Company will be required to obtain a 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife for impacts to California Department of Fish and Wildlife jurisdictional streambeds. Further, United States Gypsum Company will be required to obtain a 404 Permit from the U.S. Army Corps of

Engineers and a 401 Water Quality Certification from the Regional Water Quality Control Board for impacts to Waters of the U.S. prior to commencing the proposed Plaster City Mine Quarry Expansion/Modernization Project.

1.0 INTRODUCTION

1.1 PURPOSE OF JURISDICTIONAL DELINEATION

The purpose of this jurisdictional delineation is to assess the impacts of the proposed United States Gypsum Company (USG) Plaster City Mine Quarry Expansion/Modernization Project, on any State or federally regulated streams, rivers or lakes.

The following tasks were completed and are presented herein:

1. Delineation of all state or federal jurisdictional waters present within the project property;
2. Determination of impacts associated with the Plaster City Mine Quarry Expansion/Modernization Project on jurisdictional waters;
3. Determination of applicable state or federal regulatory permits necessary to work within these jurisdictional areas;
4. Recommendation of mitigation measures to offset impacts to state or federal jurisdictional waters.

1.2 PROJECT LOCATION

The United States Gypsum Company (USG) Plaster City Expansion/Modernization Project activities are proposed at two locations: (1) at the Plaster City Quarry and (2) at the Plaster City Plant (Figures 1 through 4). The location of the two areas is described below.

Plaster City Quarry

The Plaster City Quarry is located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78 (Figure 2). The site is located at the northwest end of the Fish Creek Mountains, east of Split Mountain and south and east of the Fish Creek Wash. Specifically, USG's properties and unpatented placer claims and mill sites are located in portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 9 East, and portions of Section and 4, Township 14 South, Range 9 East (San Bernardino Baseline and Meridian) and found on the U.S. Geological Survey Borrego Mountain Southeast Quadrangle and Carrizo Mountain Northeast Quadrangle. The Plaster City Quarry site is bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and to the south, and public lands administered by the Bureau of Land Management (BLM) to the south. Access to the Plaster City Quarry is via State Highway 78 from both San Diego and Imperial counties.

Plaster City Plant

The Plaster City Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City, California approximately 18 miles west of El Centro in Imperial County (Figure 3). Access to the Plant is via Highway 80 immediately north of I-8.

1.3 BACKGROUND

The United States Gypsum Company (USG) owns and operates an existing wallboard manufacturing Plant and gypsum Quarry in Imperial County, California. Both the Plant and Quarry were the subject of the 2006 *United States Gypsum Company Expansion/Modernization Project Draft Environmental Impact Report/Environmental Impact Statement* (2006 Draft EIR/EIS) and 2008 *United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement* (2008 Final EIR/EIS). In compliance with CEQA, the Imperial County Board of Supervisors certified the Final EIR/EIS, adopted findings of fact, a statement of overriding considerations, and a mitigation monitoring program in March 2008. The federal Lead Agency was the U.S. Bureau of Land Management (BLM). To date, the BLM has not issued a Record of Decision and no aspects of the federal actions as analyzed in the 2006 and 2008 EIR/EIS documents have been implemented.

Presently, USG is in the process of preparing a Supplemental EIS to update technical information in the 2008 United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement and to include the USACE as a cooperating agency based on USACE’s jurisdiction by law and special expertise pursuant to section 404 of the Clean Water Act (33 USC 1344).

This JD has been prepared to provide technical information regarding jurisdictional water resources within the Action Area and in response to a USACE Additional Information Request dated August 15, 2014.

1.4 PROPOSED ACTION

The USG Plaster City Expansion/Modernization Project proposes activities at two different locations: at the Plaster City Quarry and at the Plaster City Plant. For purposes of organization, aspects of the Proposed Action at the USG Plaster City Quarry (“Quarry”) and at the USG Plaster City Plant (“Plant”) are described separately.

1.4.1 Plaster City Plant

Proposed Water Pipeline Replacement

The proposed Plaster City Expansion/Modernization Project includes the replacement of an existing 8-inch diameter water pipeline from USG's groundwater storage tank in Ocotillo to the Plaster City Plant site. The existing pipeline would be replaced with a new 10-inch diameter water pipeline. The 2006 Draft EIR/EIS describes the 8-inch water pipeline as nearing the end of its useful life. Due to its age, the pipeline does not provide a reliable water supply for the USG Plant. Under existing conditions, the line experiences surges due to air in the line and water hammer caused by rapid changes in flow such as a sudden closure of a water control valve. The proposed 10-inch pipeline would provide a more reliable water supply, minimize line surges and associated leaks/rupture, provide faster water system recovery after water pipeline breaks/leaks or maintenance, and improve fire protection at the Plant.

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline. The replacement pipeline would be installed approximately 50 feet south of the Evan Hewes Highway centerline. The existing pipeline would be abandoned in place.

USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline ranges from two (2) to six (6) feet below ground surface.

1.4.2 Plaster City Quarry

The Plaster City Expansion/Modernization Project includes two activities proposed at the Plaster City Quarry: (1) installation of a waterline/powerline from Quarry Well No. 3 located on Assessor's Parcel Number (APN) 033-020-09; and (2) build out the of the Plaster City Quarry as described in the Mine Reclamation Plan (Lilburn 2003).

Proposed Plaster City Quarry Water Supply

USG proposes to install a waterline/powerline extending from the Quarry to Quarry Well No. 3. Water from the well would be transported to the Quarry via a proposed pipeline installed alongside of the existing alignment of the narrow-gauge railroad right-of-way (ROW) CALA-040412 to the Plaster City Quarry site. In addition, a power service line would be installed underground from the well head to the USG Quarry gate; power poles will be installed within the Plaster City Quarry property. The proposed 20,719 linear foot water pipeline and power line alignment is proposed approximately 30 feet north of the centerline of the existing tram road ROW CALA-040412 between the railroad and the existing railroad access/maintenance road within Sections 16, 17, 18, and 19 Township 13 South, Range 9 East. The proposed locations of these facilities are depicted on Figure 2. The proposed utility line will be 12 inches or less in diameter. A trench, approximately five (5) feet wide and seven (7) feet deep would be excavated between the railroad and maintenance road for installation of the utilities. Material would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Access for equipment will be provided on the existing railroad maintenance road. Construction is expected to occur within a 30-foot wide area along the length of the alignment. All waterline/powerline construction areas will be restored to pre-project conditions following the completion of construction activities. Impacts associated with the waterline/powerline are considered temporary.

Plaster City Quarry – Mine Development Activities

USG's Quarry holdings total approximately 2,080.4 acres; 2,032.2-acres are owned by USG and 48.2-acres are active unpatented mill site claims. Ongoing development of the Plaster City Quarry per the approved 2003 Mine Reclamation Plan would develop approximately 1,118.7 acres of USG's 2,032.2 acres of private land. The mine plan includes approximately 48.2 acres comprised of ten existing mill site claims; an additional five mill sites (25 acres) are proposed as part of the SEIS Proposed Action. Approximately 18.1 acres of Public Land under the management of the BLM would be disturbed by the proposed mine development. Build-out of the 2003 Mine Reclamation Plan would result in impacts to a total of 1,136.8 acres on both private and public land.

Mining activities would be conducted in phases as outlined in Table 1 below.

Table 1
2016 Existing and Planned Disturbance
Plaster City Quarry Mine Plan

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Processing Area	39.2	39.2	0			
Phase 1A	163.6	163.6	0.0			
Phase 1B	151.8	151.8	0.0			

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Phase 2	87.9	18.5	69.4			
Phase 2p	5.3	0.0	5.3			
Butte Mill Site				5.0	0.0	0.9
Phase 3	36.4	5.0	31.4			
Phase 3p	1.2	0.0	1.2			
Phase 4	46.4	15.3	31.1			
Phase 5	29.8	7.4	22.4			
Annex Mill Site #4				5.0	0.0	2.5
Annex Mill Site #3				5.0	0.0	0.3
Phase 6	78.9	1.7	77.2			
Phase 6Bp	47.2	0.0	47.2			
Haul Road to 6Bp	9.1	0.0	9.1			
Phase 7Bp	32.5	0.0	32.5			
Haul Road to 7Bp	5.8	0.0	5.8			
Phase 7	90.3	1.8	88.5			
Phase 8	114.3	0.0	114.3			
Cactus Mill Site				5.0	0.0	3.2
Phase 9	54.2	0.0	54.2			
Desert Mill Site				5.0	0.0	0.1
Phase 10	13.2	2.1	11.1			
Phase 10p	34.2	0.0	34.2			
Shoveler Haul Road		2.1	0.0			
Annex Mill Site #1				5.0	1.1	0.0
Phase S1	31.9	21.5	10.4			

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Phase S2	24.5	3.2	21.3			
Phase S3	18.9	3.5	15.4			
Peoria Mill Site				3.4	0.0	0.0
Springfield Mill Site				4.8	0.0	0.0
Anchorage Mill Site				5.0	0	0
Annex Mill Site #2				5.0	0	0
Future Mill Site 1				5.0	0.0	0.4
Future Mill Site 2				5.0	0.0	3.2
Future Mill Site 3				5.0	0.0	1.8
Future Mill Site 4				5.0	0.0	4.9
Future Mill Site 5				5.0	0.0	0.8
TOTALS	**1,118.7**	**436.7**	**682.0**	**73.2**	**1.1**	**18.1**

Alluvial Quarrying and Ephemeral Drainages

As shown in the 2003 Mine Plan, as quarrying of gypsum outcrops extends southward in the mine plan area, the gypsum underlying alluvial overburden will be developed and extracted. Quarrying of the alluvial wash deposits will progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the underlying gypsum will progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached. The depth of each Plaster City Mine Quarry phase will vary based on the bottom limit of gypsum.

An earthen berm will be constructed along the west side of the developed quarry in order to preserve the natural drainage pathway. The proposed berm would work as a natural earth channel, with one side of the channel that will preserve the existing characteristic of the drainage area to the west and will protect the quarry operations to the east from floodwaters. A hydrology study and drainage analysis (Joseph E. Bonadiman & Associates Inc., July 2004) determined that a 5-foot high by 20-foot wide retention berm that includes two feet of freeboard would adequately divert flows towards Fish Creek Wash.

Phases or portions of phases in the alluvial wash will require the stripping of alluvial material or overburden to expose the gypsum. As overburden is stripped a portion will be pushed to the east bank of the wash and the furthest south limits of the planned disturbance to form a permanent retention berm. The purpose of the berm is to divert sheet flow from the Plaster City Mine Quarry operations in the event of storm runoff. A second berm consisting of the top one foot of surface alluvium will be pushed over the western wash quarry slopes and used as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time but will typically be pushed into the adjoining mined out areas for reclamation of the slopes such that overburden from Phase 3 will be used in Phase 2, overburden from Phase 4 will be used in Phase 3, and so forth.

Plaster City Quarry Reclamation

The Mine Reclamation Plan is divided into areas based upon the current geological data, quantity and quality of gypsum, market demand and proximity to the Plant. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. Reclamation activities are described in the *Mine Reclamation Plan* (Lilburn 2003); reclamation activities associated with restoration of drainages are summarized herein.

As described in the Mine Reclamation Plan, on-site hillsides and outcrops are erosional features of the landscape and are expected to continue to erode throughout mining and reclamation. This process would continue to sculpt the Quarry benches, eroding the manmade lines of the bench faces. Pre-mining drainages would be maintained where possible. Disturbance would be limited in these drainages. If necessary, standard erosion control measures such as rip-rap would be placed in the drainages to reduce flow and erosion. Surface flows would be directed around the quarry phases and into the main quarry wash by the proposed Quarry berm.

The Mine Plan would retain drainage within the main quarry wash with berms created from overburden materials. Ultimately, the wash would be lowered along its eastern edge, extending from Phase 9 of the Mine Plan at the uppermost elevation to Phase 10 at the lowest. Phase 10 would be mined contiguous with Phase 5 at its upstream end and to grade at its downstream end. Surface flow that exits the ultimate reclaimed channel would merge with the existing wash at the foot of Phase 10 in buildout conditions.

2.0 REGULATORY FRAMEWORK

2.1 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE STREAMBED ALTERATION AGREEMENT

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the California Fish and Game Code (F&GC), requires that the CDFW be consulted if a proposed development project has the potential to detrimentally effect a stream and thereby wildlife resources that depend on a stream for continued viability (F&GC Division 2, Chapter 5, section 1600-1616). A Section 1602 Lake or Streambed Alteration Agreement is required, should the CDFW determine that the proposed project may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

For the purposes of clarification, a stream is defined by CDFW as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators." The historic hydrologic regime is defined as circa 1800 to the present (CDFW 2010).

2.2 REGIONAL WATER QUALITY CONTROL BOARD 401 CERTIFICATION/WASTE DISCHARGE REQUIREMENTS

The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal Clean Water Act (CWA) as well as the Porter Cologne Act (Water Code section 13260). Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Any such discharges will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA. The Porter Cologne Act requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the state to file a report of discharge. Discharge of fill material into "waters" of the State which does not fall under the jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act, may require authorization through application of waste discharge requirements or through waiver of Waste Discharge Requirements.

2.3 UNITED STATES ARMY CORPS OF ENGINEERS CLEAN WATER ACT 404 PERMIT

The United States Army Corps of Engineers (USACE) regulates "discharge of dredged or fill material" into wetlands and waters of the United States, which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (33 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the Clean Water Act.

The USACE requires that the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratories, 1987) be used for delineating wetlands and waters of the United States. To qualify for wetlands status; vegetation, soils, and hydrologic parameters must all be met. "Waters" of the U.S. are delineated based upon the "ordinary high water mark" (OHWM) as determined by erosion, the deposition of vegetation or debris, and changes in vegetation within rivers and streams and described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

For the purposes of this section, the term "fill" is defined as: material placed in waters of the United States where the material has the effect of:

- Replacing any portion of a water of the United States with dry land; or
- Changing the bottom elevation of any portion of a water of the United States.

Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

The definition of "discharge of dredged material" is defined as: any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States. The term includes, but is not limited to, the following:

- The addition of dredged material to a specified discharge site located in waters of the United States;
- The runoff or overflow, associated with a dredging operation, from a contained land or water disposal area; and
- Any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any

activity, including mechanized land clearing, ditching, channelization, or other excavation.

The term discharge of dredged material does not include the following:

- Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402 of the Clean Water Act even though the extraction and deposit of such material may require a permit from the Corps or applicable State.
- Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chain-sawing) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material.
- Incidental fallback.

3.0 PROJECT SETTING

3.1 VEGETATION COMMUNITY

Plaster City Quarry

The Plaster City Quarry is located in the arid Colorado Desert. The vicinity is characterized by sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Ambrosia dumosa*), hollyleaf bursage (*Franseria ilicilolia*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), and smoketree (*Psorothamnus spinosus*); as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*).

Undisturbed uplands on the site support desert shrubland of the creosote bush series, creosote bush – white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops have pygmy cedar and are almost devoid of vegetation.

The dominant drainage feature at the Plaster City Quarry is the alluvial wash in the valley formed by the Fish Creek Mountains. The alluvial wash is made up of a braided channel network and is generally covered by creosote bush, and creosote bush–white bursage series. In the braided channels, there is little or no ocotillo. Drainage channels had a higher occurrence of cheesebush and indigo bush than the upland areas. The larger braided channels also support catclaw acacia, smoketree, and desert lavender (*Hyptis emoryi*).

Other drainage features at the Plaster City Quarry consist of upland drainages located in the gypsum outcrops. These drainages are characterized by fast draining channels with vegetation that is similar to the surrounding upland areas. The dominant vegetation at the Gypsum outcrops is pygmy cedar. Plant species associated with the gypsum outcrops include white bursage, creosote bush, brittlebush, and cheesebush.

Plaster City Plant

The proposed 8.77 miles of replacement waterline which runs from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant, is located in the arid Colorado Desert. The vicinity is characterized by desert shrubland dominated by creosote bush with white bursage, hollyleaf bursage, brittlebush, cheesebush, pygmy cedar, catclaw acacia, indigo bush, and smoketree; as well as several varieties of cactus such as barrel cactus, beavertail cactus, silver cholla, and ocotillo. Some areas of the waterline replacement area have been disturbed by activities associated with road maintenance. Dominant vegetation in these areas are four-wing saltbush (*Atriplex canescens*), cattle spinach (*Atriplex polycarpa*), big sagebrush (*Atriplex lentiformis*) and cheesebush.

3.2 HYDROLOGY

Plaster City Quarry

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year.[1] Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation. Average rainfall for the Plaster City Quarry and Fish Creek Wash is approximately three inches per year.

The USG Plaster City Quarry is identified by the National Hydrography Dataset to be located in HUC12-181002030602. The sub-watershed is 35.314 square miles. Rain waters flow from the Fish Creek Mountains located to the east and south and from the Split Mountain located to the

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[1] Schoenherr, Allen A, *A Natural History of California*, University of California Press, 1992.

west. Flows move in a north, northeasterly direction forming Fish Creek Wash. The flows eventually enter the Salton Sea located 18 miles northeast of the Plaster City Quarry.

The Plaster City Quarry is located in the Colorado River Basin Plan, the Anza Borrego and Imperial hydrologic units, and the Ocotillo Lower Felipe, Brawley, Coyote Wells hydrologic areas (Figure 5).

Plaster City Plant

The USG Plaster City Plant is identified by the National Hydrography Dataset to be located in HUC12-181002041004 and HUC12-181002041008. The Plaster City Plant is located within the Anza Borrego and Imperial hydrologic units (Figure 5). Hydrologic flows travel east through Coyote Wash and northeast through the New River. The flows eventually enter the Salton Sea located approximately 22 miles northeast of the Plaster City Plant..

3.3 SOILS

Plaster City Quarry

Soils at the Plaster City Quarry and in the vicinity consist predominantly of beds of gypsum dated from the Miocene age. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation, Fish Creek Gypsum, and Pliocene Marine Imperial Formation. The gypsum beds in the Plaster City Quarry area are 100–200 feet thick, and are exposed continuously on the surface for a distance of about 2.5 miles. Structurally, they form the northeast limb of a northwest trending syncline, the axis of which lies in the broad valley to the west. The general strike of the gypsum beds is north 10–20 degrees west and dip 25–35 degrees southwest. Locally, the beds are warped into minor folds. The material is a light buff-gray, fine to medium-grained compact, equi-granular rock composed almost entirely of gypsum. Minor amounts of anhydrite are present in some parts of the deposit mainly as thin beds and lenses. Very minor shreds of biotite occur disseminated in the beds along with a finely divided opaque material, which is probably iron and manganese oxides.

The following descriptions of the geologic units in the Plaster City Quarry area and vicinity are summarized from the Draft Environmental Impact Report/Environmental Impact Statement for the USG Plaster City Expansion/Modernization Project (Resource Design 2006).

<u>Granitic Bedrock (Kgr)</u>

Granitic bedrock of tonalite composition is exposed along the eastern side of the mapped area. The tonalite is coarse-grained and dark gray to black, with minor felsic dikes and sills. Foliation is moderately developed, with no preferred orientation observed. In many places, the rock grades to granitic gneiss. Natural slopes include some rounded boulders. These rocks are Cretaceous and older.

Split Mountain Conglomerate (Tsm)

This unit consists primarily of massive, well-consolidated conglomerate with subrounded clasts up to approximately 10 feet in maximum dimension. Clast types are largely tonalite in the mapped area. Weathered exposures are dark reddish brown and contrast with the dark gray color of fresh exposures. This unit rests on the tonalite and is a basal conglomerate derived from it. In the Split Mountain Gorge area to the west, the conglomerate is overlain by a lens of rock slide megabreccia, but the megabreccia is not present in the mapped area. In the mapped area, the uppermost portion of the Split Mountain Conglomerate consists of fine-grained sandstone with minor shale. The fine-grained beds grade upward into the Fish Creek Gypsum. The thickness of the Split Mountain Conglomerate decreases from at least 600 feet in the northern part of the mapped area to less than approximately 100 feet in the southern portion.

Fish Creek Gypsum (Tfc)

The Fish Creek Gypsum is up to 200 feet thick and averages about 125 feet in thickness in the mapped area. The gypsum is generally greater than 95 percent pure, with minor impurities consisting of clays, carbonate and detrital minerals. The color is variable, but is generally light gray to white, with patches of red and black. The gypsum is an evaporite deposit, formed in a shallow marine environment in Miocene time. As exposed in outcrop and in Plaster City Quarry faces, the gypsum is generally very dense, hard and massive. Blasting is required for efficient excavation. Where thinly bedded exposures are present, the bedding is often highly contorted on a small scale, similar to other evaporite deposits. The deformation is attributed to plastic flow due to gravity and volumetric expansion associated with the change from anhydrite to gypsum. However, the deformation is internal to the gypsum bed. The underlying clastic material does not display similar deformation.

Older Alluvium (Qoa)

The broad wash that traverses the mapped area includes a number of relatively stable and elevated erosion surfaces (geomorphic surfaces), particularly in the southern third of the site. The stability of these surfaces is evidenced by various factors including the degree of soil development, the presence of desert pavements and the local topography. The desert pavements are identified by the concentration of surficial clasts and the presence of varnish on the top sides of clasts and rubification (reddening) on the bottom sides. Bar and swale topography is present in these areas, suggesting a long period of gradual dissection. Where exposed in the sides of active drainages, these soils exhibit strong carbonate and gypsum cementation in their upper horizons. All of these factors indicate a long period of subaerial exposure, probably at least 20,000 years and up to approximately 200,000 years. As such, the stable, uplifted surfaces were mapped as older alluvium of late Pleistocene age. Many surfaces of varying ages are present, but all were mapped as older alluvium.

The older alluvium consists of gray to brown, gravelly sands with silt, cobbles and boulders. Clasts are largely subangular tonalite, but metamorphic and gypsum rock clasts are present.

Observation of steep side slopes in incised drainages in the southern third of the site indicates that the older alluvium is only a thin veneer above a relatively planar erosion surface developed on the Fish Creek Gypsum.

Younger Alluvium (Qya)

Active washes incise all of the other units in the mapped area. The active washes merge in the northern portion of the mapped area, becoming a single broad wash several hundred feet wide. The wash deposits are generally coarse sands with cobbles in the southern portion of the site, grading to silty fine sands in the northern portion of the site. Clasts are largely subangular to subrounded tonalite, but metamorphic and gypsum rock clasts are present. No soil development was observed and these materials are entirely unconsolidated.

No hydric soils are present.

Plaster City Plant

Approximately 98.5 percent of the soils at the Plaster City Plant and the vicinity are not mapped. The remaining 1.5 percent of the soils that are mapped consist of Indio-Vint complex and Rositas silt loam. These mapped soils are located within the eastern portion of the Plaster City Plant (Appendix B). The following descriptions of the soils located within the Plaster City Plant area and vicinity are summarized from the U.S. Department of Agriculture Soil Conservation Service Soil Survey of Imperial County, California, Imperial Valley Area (1981).

Indio-Vint Complex (119)

These soils are found on flood plains and alluvial basin floors at elevations of 200 feet above sea level to 230 feet below. This unit averages about 35 percent Indio loam and 30 percent Vint loamy fine sand. The remaining 35 percent is Rositas, Meloland, and Holtville soils; soils that are highly stratified with sand to silt loam textures; narrow areas with slopes of 2 to 5 percent; and areas that have hummocky or dune topography.

The Indio soil is very deep and well drained. It formed in alluvial and eolian sediments of mixed origin. Some areas are saline. Permeability of the Indio soil is moderate, and availa- ble water capacity is high to very high. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is moderate. The effective rooting depth is

60 inches or more.

The Vint soil is very deep and well drained. It formed in alluvial and eolian sediments from diverse sources. Permeability of the Vint soil is moderately rapid, and available water capacity is moderate. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is high. The effective rooting depth is 60 inches or more.

Rositas Silt Loam (137)

This very deep, somewhat excessively drained, nearly level soil is on flood plains, basins, and terracesat elevations of 35 to 300 feet. Included with this soil in mapping are areas of Vint and Meloland soils and scattered coppice dunes of Rositas fine sand. Permeability is rapid, and available water capacity is low. Surface runoff is slow, and the hazard of water erosion is slight. There is a moderate hazard of soil blowing and abrasion to young plants. The effective root- ing depth is 60 inches or more.

4.0 METHODOLOGY

Prior to the site visit, project plans, topographic maps, and satellite imaging were examined to establish an accurate project location, project description, watershed, soils, and surrounding land uses. The project location was reviewed and studied for information that would aid in determining the potential for wetlands, perennial, intermittent, or episodic drainages, and associated riparian vegetation. Current and historic aerial imagery of the project area were reviewed for signs of stream activity. Changes in landscape, color, vegetation density, and drainage pattern were noted. Anthropogenic disturbances within the project area were also identified.

Potential watercourses and related landform boundaries, such as changes in landscape color, vegetation densities, and drainage patterns, were then outlined on aerial photography. Transects were then selected for field verification of stream presence indicators. Reference points along each transect were recorded on a hand-held Global Positioning System (GPS) for field reference.

Field surveys of the proposed Plaster City Expansion/Modernization Project areas were conducted on April 19, 2016 through April 21, 2016. The jurisdictional delineation survey area included all of USG holdings at the Plaster City Quarry, a 150-foot wide alignment north of the Quarry tram railroad for the proposed waterline/powerline form the Quarry to Quarry Well No. 3, and the alignment between the existing Evan Hewes Highway and old Evan Hewes Highway where replacement of the waterline from Ocotillo to the Plaster City Plant is proposed.

During the field survey, the selected transects were walked a minimum of 100 feet upstream and downstream, noting the presence or absence of fluvial activity, boundaries of geomorphic units, changes in plant species composition between different geomorphic units, photographing points of transition, and mapping the watercourse and watercourse boundaries. The guidelines followed are those established in the 2014 *Mapping Episodic Stream Activity (MESA) Field Guide*. Areas measured were also recorded using a hand-held GPS for accurate location reference.

Furthermore, the presence of an ordinary high water mark was recorded. Where the presence of an OHWM was evident, a second measurement was taken for the width of the OHWM and recorded. The OHWM was determined based upon erosion, the deposition of vegetation or debris, and changes in vegetation, as described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

Where changes in plant community composition were apparent, the area was examined for the possibility of wetlands. Whether or not adjacent to WUS, the potential wetland area is evaluated for the presence of the three wetland indicators: hydrology, hydric soils and hydrophytic vegetation. The guidelines followed are those established in the 1987 *Army Corps of Engineers Manual.*

Jurisdictional drainages and wetlands were evaluated for impacts associated with all aspects of the proposed Plaster City Expansion/Modernization Project. The mine development plan and mine development information obtained from the USG administrative staff was referenced to delineate and quantify the area to be impacted by the proposed Plaster City Quarry. The expansion footprint, vegetation, wildlife, hydrology, and water quality impacts were all calculated and recorded. The jurisdictional drainages and wetlands were also evaluated for their connectivity to “navigable waters” as described in “The Clean Water Act”. The field assessments for the waterline/powerline north of the quarry and the waterline at the Plaster City Plant followed similar procedures.

5.0 RESULTS

5.1 RESULTS OF THE JURISDICTIONAL DELINEATION

A total of 327.55 acres of jurisdictional drainages were identified to occur within the proposed Plaster City Quarry Expansion/Modernization Project boundaries (Figures 6 and 7, 1 through 8). No significant amount of riparian vegetation was observed to occur on the drainages; therefore, the same jurisdictional areas were identified for the CDFW, USACE, and RWQCB.

5.2 EXISTING RESOURCES ASSOCIATED WITH DRAINAGES

Jurisdictional drainages that are unnamed drainages are identified on the figures and discussed below as they occur within each of the proposed Plaster City Quarry Expansion/Modernization Project areas: Plaster City Quarry, the Plaster City Quarry new proposed water/power supply alignment, and the Plaster City Plant water supply line replacement area.

5.2.1 Plaster City Quarry

A total of 325.79 acres of unnamed streambeds occur in the Plaster City Quarry area (Figure 6). The drainages exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in these drainages include: smoke tree *(Psorothamnus spinosus)*, white bursage *(Ambrosia dumosa)*, catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose)*, ocotillo *(Foquieria splendens)*, and Schott's indigo bush (*Psorothamnus schotti)*.

No wetland habitat was identified to occur in the Plaster City Quarry area.

5.2.2 Plaster City Quarry Water Supply

A total of 0.21 acre of unnamed streambeds were identified in the portion of the survey area corresponding the alignment for a proposed waterline/powerline extending from the Quarry to Quarry Well No. 3 (APN 033-020-09). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus)*, white bursage *(Ambrosia dumosa)*, catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose)*, ocotillo *(Foquieria splendens)*, and Schott's indigo bush (*Psorothamnus schotti)*.

No wetland habitat was identified to occur in the waterline/powerline survey area.

5.2.3 Plaster City Plant Water Supply

A total of 1.55 acres of unnamed streambeds were identified in the survey area corresponding to the Plaster City Plant waterline replacement (Figures 7, 1 through 8). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus)*, white bursage *(Ambrosia dumosa)*, catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose)*, ocotillo *(Foquieria splendens)*, and Schott's indigo bush (*Psorothamnus schotti)*.

No wetland habitat was identified to occur in the water supply line replacement survey area.

5.3 AGENCY JURISDICTION

5.3.1 California Department of Fish and Wildlife

Under the Lake and Streambed Alteration Program, the California Department of Fish and Wildlife has jurisdiction over portions of the site identified as stream or lake as defined by the presence of a bed, bank or channel and where riparian vegetation was present on a bank to the outside drip-line of the vegetation. The California Department of Fish and Wildlife would assert jurisdiction over all 327.55 acres of onsite streambeds located within the proposed Plaster City Quarry Expansion/Modernization Project boundaries. These streambeds would fall under the jurisdiction of California Fish and Game Code Section 1602. Any impacts to these drainages would require notification to the Department of Fish and Wildlife for review under the Streambed Alteration Agreement Program.

5.3.2 Regional Water Quality Control Board

Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. Impacts to any of the 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries will require a 404 permit from the USACE; therefore, a 401 Certification from the Colorado River RWQCB will be needed upon issuance of a 404 permit.

5.3.3 Army Corps of Engineers

The USACE regulates discharge of dredged or fill material into wetlands and “waters of the United States”, which includes “tidal waters”, “interstate waters”, and “all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide” pursuant to provisions of Section 404 of the Clean Water Act.

The 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries consist of a series of unnamed desert ephemeral streambeds that flow only during severe rain events. These streambeds have a definable “ordinary high water mark” distinguishable by erosional and sedimentary characteristics. These drainages ultimately flow into the Salton Sea. The Salton Sea is a traditional navigable water as defined by the Clean Water

Act. Therefore, drainages located within the proposed Plaster City Expansion/Modernization Project boundaries have a significant nexus to “traditional navigable water” and a 404 Clean Water Act permit from the USACE would be required for any fill associated with the within the proposed Plaster City Expansion/Modernization Project.

5.4 PROJECT IMPACTS TO JURISDICTIONAL AREAS

5.4.1 Impacts to Jurisdictional Drainages

Plaster City Quarry

The proposed Plaster City Expansion/Modernization Project will permanently impact portions of jurisdictional streambeds located within the Plaster City Quarry area of development as shown in the Mine Plan. Impacts to these drainages are considered permanent because restoration activities are not anticipated to occur until reclamation of the Plaster City Quarry is undertaken. Furthermore, the reclamation plan does not specifically address restoration of streams.

Ephemeral streambeds and washes located within the Plaster City Quarry, will be excavated and filled as the Plaster City Quarry expands to access new deposits of gypsum. Proposed operations within this area will utilize heavy machinery and explosives to excavate the new phases of the Quarry as outlined in Table 1 above and described in the Mine Reclamation Plan (Lilburn 2003). Alluvial wash quarrying will involve the construction of a berm beginning at the southernmost limit of the disturbance area. The expansion of quarrying activities within the Plaster City Quarry is anticipated to result in approximately 134.08 acres (107,458 linear feet) of permanent impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Appendix A).

Plaster City Quarry Water Supply

Installation of new well and approximate 20,719 lineal feet of water supply pipeline and power supply lines will result in the filling of all ephemeral streambeds and washes within the waterline/powerline area. Ephemeral streambeds and washes located within the waterline/powerline area will be excavated and filled as a result of the proposed waterline/powerline installation activities. The proposed waterline/powerline installation activities are anticipated to result in approximately 0.21 acres of impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8).

Plaster City Plant Water Supply

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline.

The replacement pipeline would be installed approximately 50 feet south of the Evan Hewes Highway centerline. The existing pipeline would be abandoned in place.

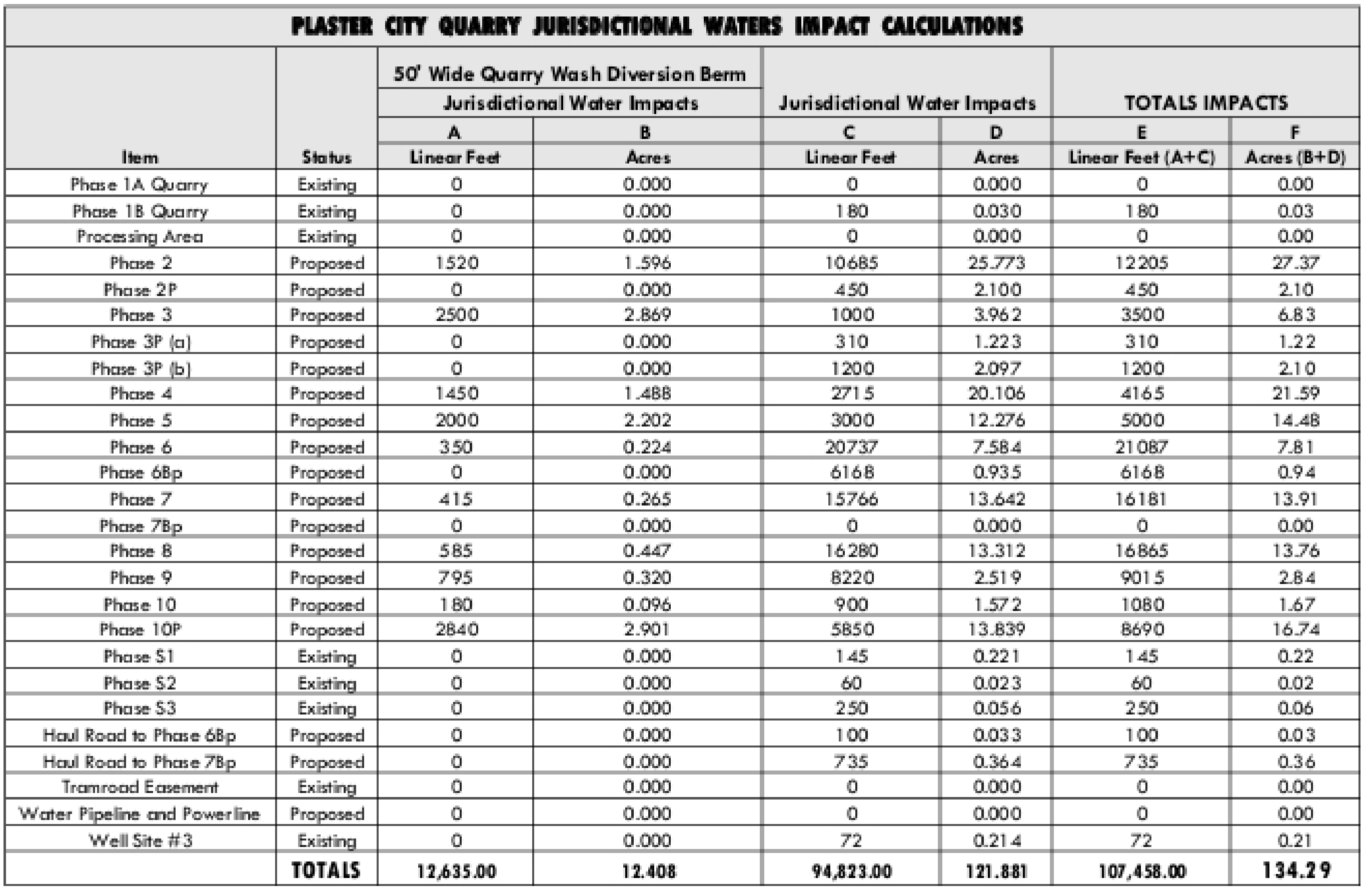
USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline ranges from two (2) to six (6) feet below ground surface.

The proposed water pipeline replacement activities will result in the filling of all ephemeral streambeds and washes within the water supply line replacement area. Ephemeral streambeds and washes located within the water supply line replacement area will be excavated and filled as a result of the proposed water supply pipeline replacement activities. The proposed water supply pipeline replacement activities are anticipated to result in approximately 1.55 acres of temporary impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8). All waterline construction areas will be restored to pre-project conditions following the completion of construction activities.

Overall Project Impacts

Implementation of the Plaster City Expansion/Modernization project would impact a total of 135.84 acres of CDFW, USACE, and RWQCB jurisdictional streambeds. Full build-out of the Plaster City Quarry would result in permanent impacts to approximately 134.29 acres of jurisdictional drainages. Activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. The impacts to jurisdictional drainages for each project area is outlined in Tables 2 and 3 below.

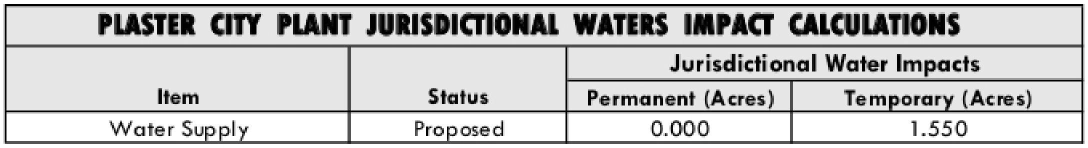
Table 2.



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

Item	Status	50' Wide Quarry Wash Diversion Berm Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
		Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

Table 3.



PLASTER CITY PLANT JURISDICTIONAL WATERS IMPACT CALCULATIONS

Item	Status	Jurisdictional Water Impacts	
		Permanent (Acres)	Temporary (Acres)
Water Supply	Proposed	0.000	1.550

5.4.2 Project Impacts to Wetlands

No wetlands were identified or recorded within the Plaster City Expansion/Modernization Project survey area. The project will not impact wetlands.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 PERMITS

6.1.1 Streambed Alteration Agreement Notification

The proposed Plaster City Expansion/Modernization Project will result in approximately 134.29 acres of permanent impacts and streambeds within the jurisdiction of the CDFW. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to submit a notification for a 1602 Streambed Alteration Agreement to the California Department of Fish and Wildlife for impacts to jurisdictional streambeds prior to commencing activities associated with the proposed Plaster City Expansion/Modernization Project activities.

6.1.2 Regional Water Quality Control Board

In 2014 the Colorado River Basin Regional Water Quality Control Board issued an Order for a Technically-Conditioned Clean Water Act Section 401 Water Quality Certification. This 401 Certification covers an approximately 111-acre area consisting of Quarry Phases 2 and 2P and an approximately 25-acre area at the Shoveler Quarry.

The proposed Plaster City Expansion/Modernization Project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the Colorado River Water Quality Control Board. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 401 Certification for impacts to Waters of the U.S. from the Colorado River RWQCB for project activities not covered under the existing 401 Water Quality Certification prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.1.3 United States Army Corps of Engineers

The proposed Plaster City Expansion/Modernization Project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the USACE. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 404 Permit from the USACE for impacts to Waters of the U.S. prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.2 AVOIDANCE AND MINIMIZATION RECOMMENDATIONS

To minimize impacts associated with the proposed Plaster City Expansion/Modernization Project on resources associated with the drainages, the following avoidance and minimization measures are recommended:

Wildlife

- USG shall instruct employees and other visitors at the mine to avoid Peninsular Bighorn Sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project proponent has established a training program, including new-employee orientation and annual refreshers, to educate employees/visitors regarding bighorn sheep and the importance of avoidance. A Section 7 consultation was initiated by BLM with USFWS in 2008 to determine potential impacts to Peninsular Bighorn Sheep and determine recommended methods of avoidance. To date USFWS has not rendered an opinion.
- The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the mine manager. Upon receiving any such reports, the mine manager shall contact the appropriate authorities for removal of domestic animals.
- In project areas where nesting birds may occur, the applicant: 1) shall avoid removing potential nesting riparian vegetation from March 15 through September 15, or 2) shall survey all potential nesting riparian vegetation within the project site for active bird nests. If an active bird nest is located, the nest site shall be flagged or staked a minimum of 5 yards in all directions, the flagged zone shall not be disturbed until the nest becomes inactive.

Habitat/Vegetation

- When appropriate, mitigation for the removal of vegetation associated with the drainage shall include re-vegetation of suitable areas with desirable vegetation native to the area.
- Work areas within jurisdictional drainages shall be delineated with flagging or other means of marking prior to ground disturbance to assure work activities and impacts do not exceed permitted limits.
- All areas of disturbed soils with slopes towards a wash shall be stabilized to reduce erosion potential. Where possible, stabilization shall include the re-vegetation of stripped or exposed areas with vegetation native to the area. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials may be used for such stabilization.

Best Management Practices

- Structures and associated materials, including debris, not designed to withstand high seasonal flows shall be relocated to areas above the high water mark before such flows occur.

- All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating materials, oil or other petroleum products, or any other substance resulting from project-related activities which would be hazardous to aquatic life or jurisdictional waters, shall be prevented from contaminating the soil and/or entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may be washed by rainfall or runoff into jurisdictional waters. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.
- Any project-disturbed portions of drainages not permanently impacted by this project will be restored to as near pre-project conditions as possible.
- Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This will include the work site to be isolated and/or the construction of silt catchment basins, so the silt or other deleterious materials are not allowed to pass to the downstream reaches.
- Spoil sites shall not be located within a wash, where spoil can be washed back into a stream, or where it will cover aquatic or riparian vegetation. The applicant will remove all human-generated debris.

7.0 REFERENCES CITED

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Project Specific References

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FIGURES

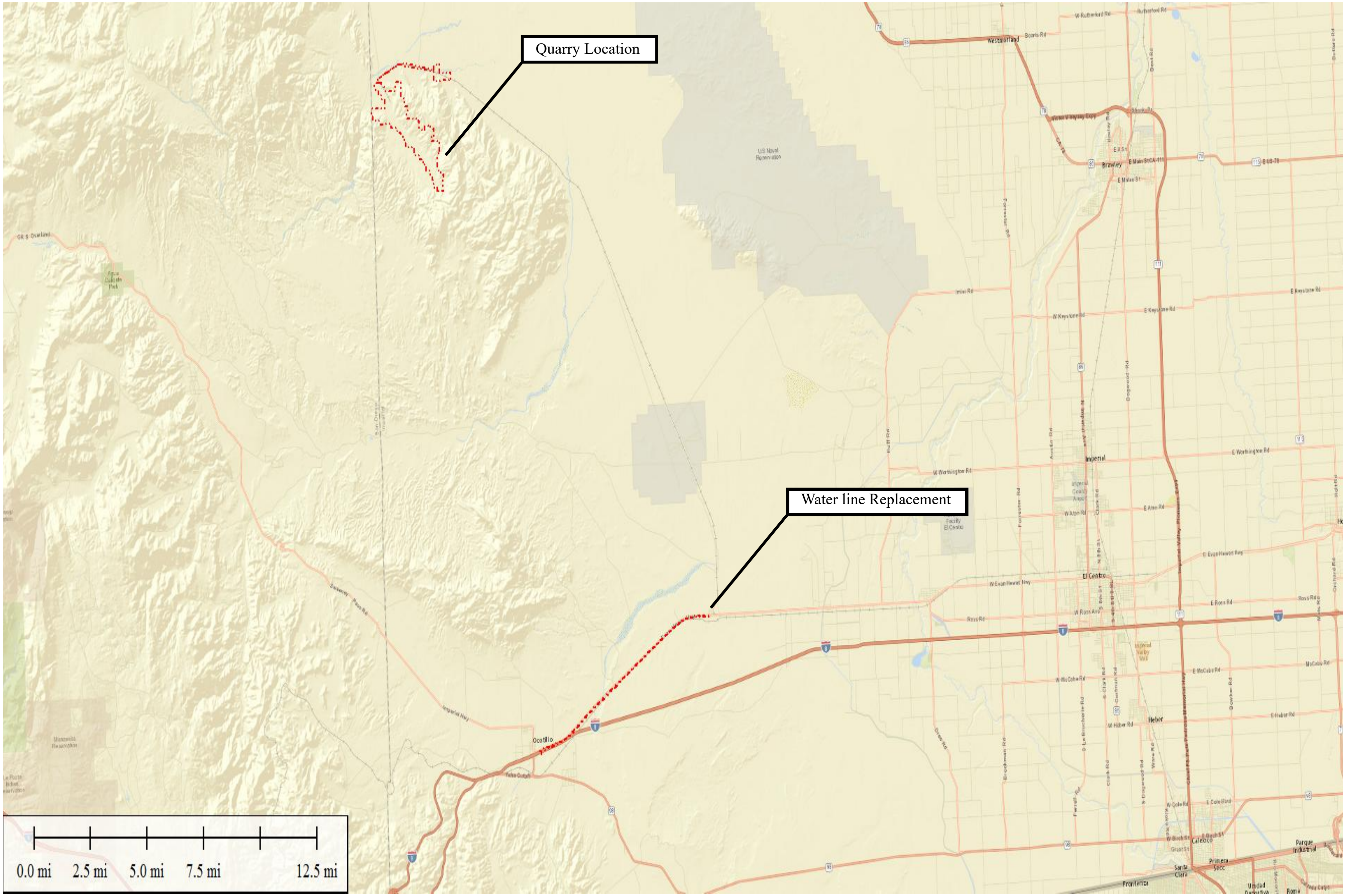

Figure 1

Vicinity Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

🟥 Project Locations

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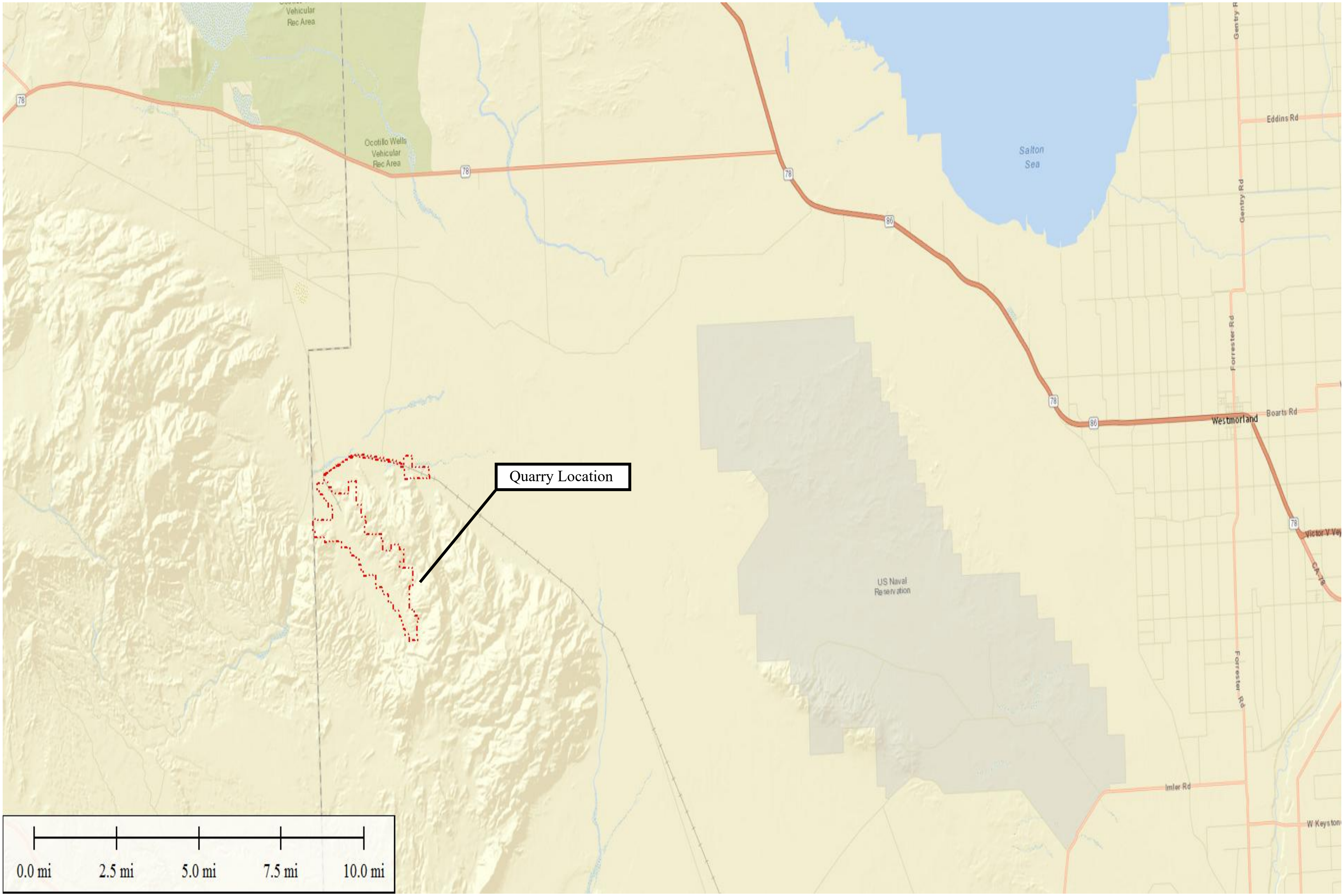

Figure 2

Quarry Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Plaster City Quarry Location

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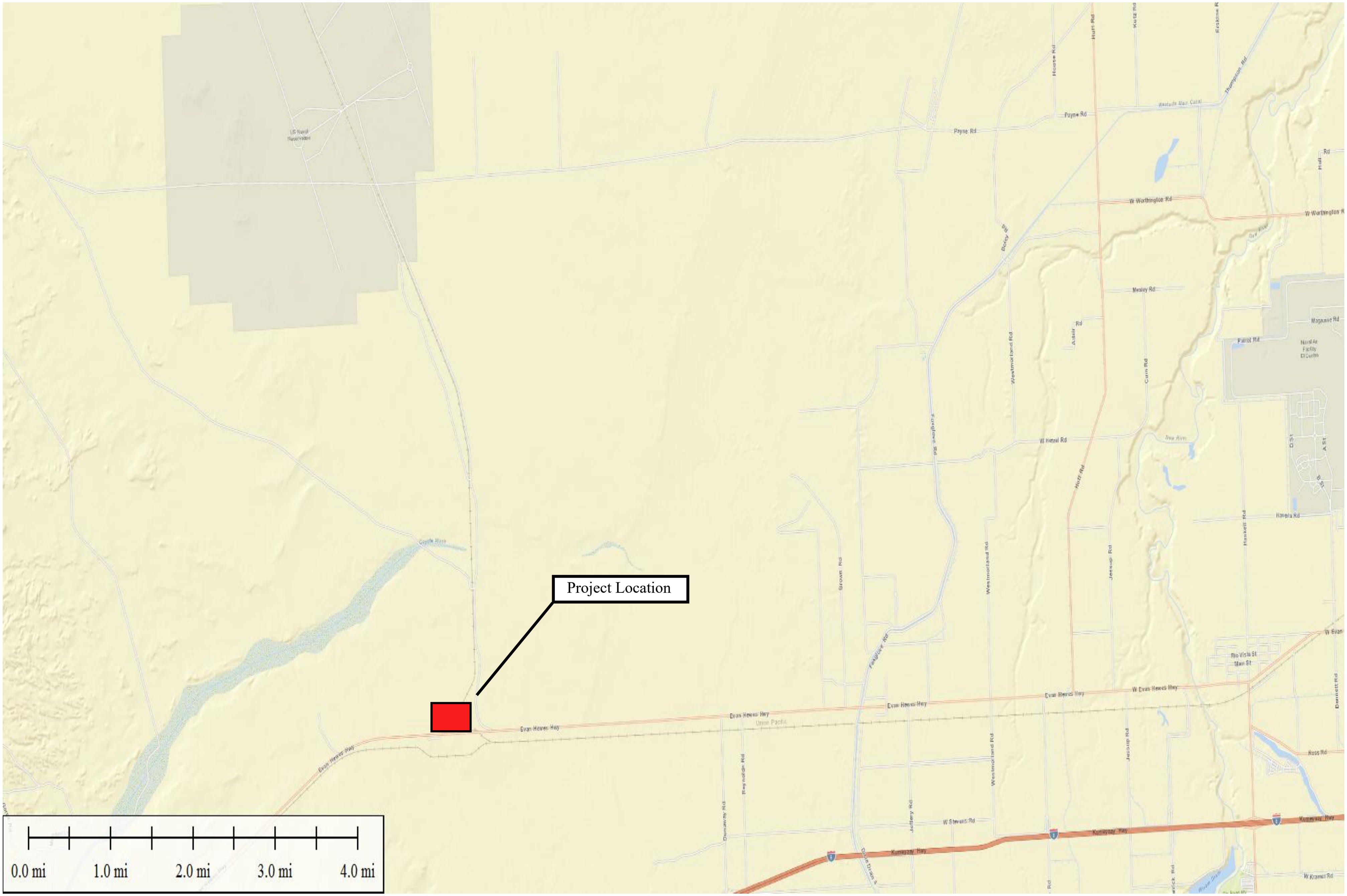

Figure 3

Plaster City Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

🟥 Plaster City Plant Location

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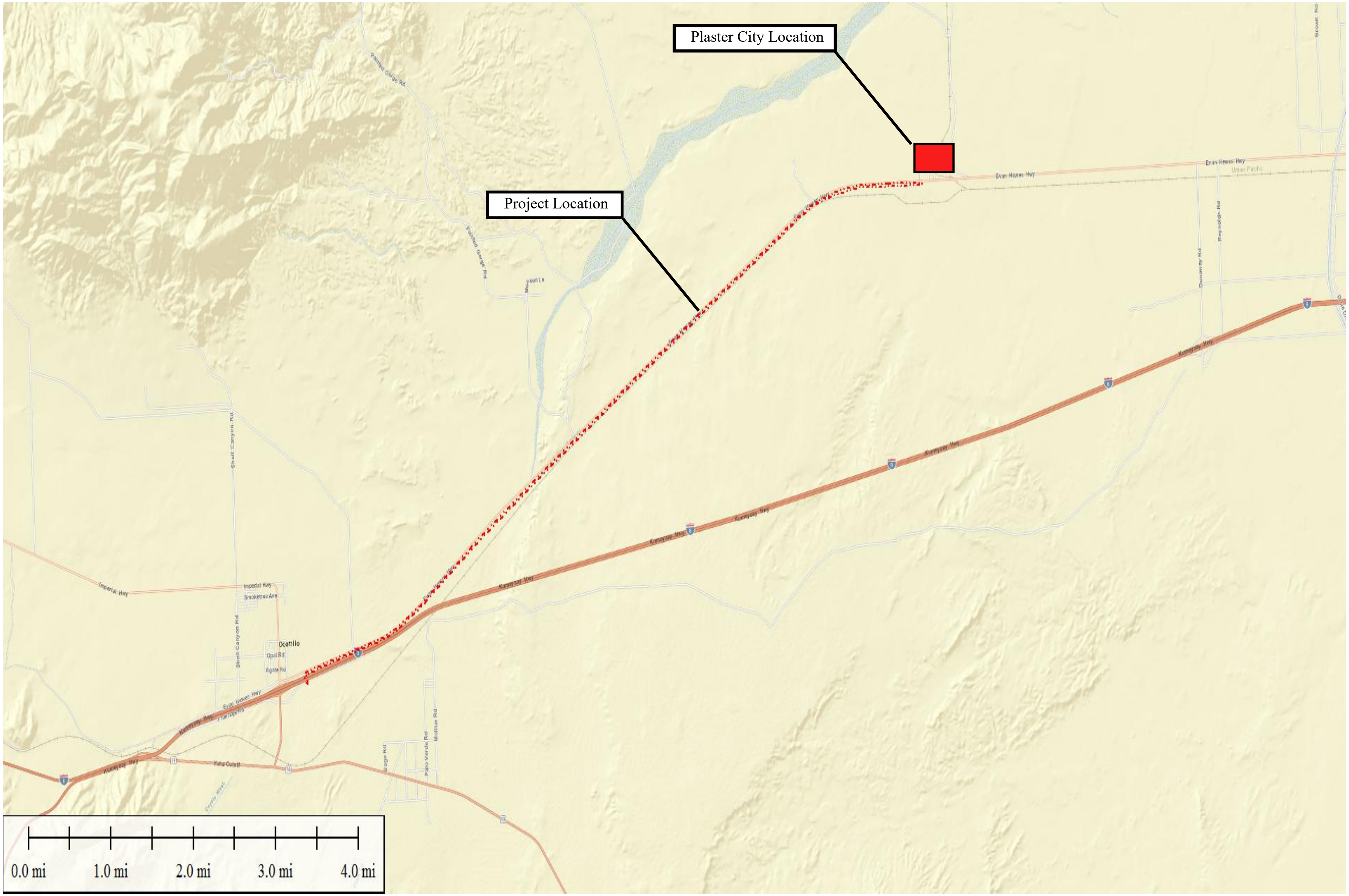

Figure 4

Water Line Replacement Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

🟥 Plaster City Plant Location

┅ Water Line Replacement Location

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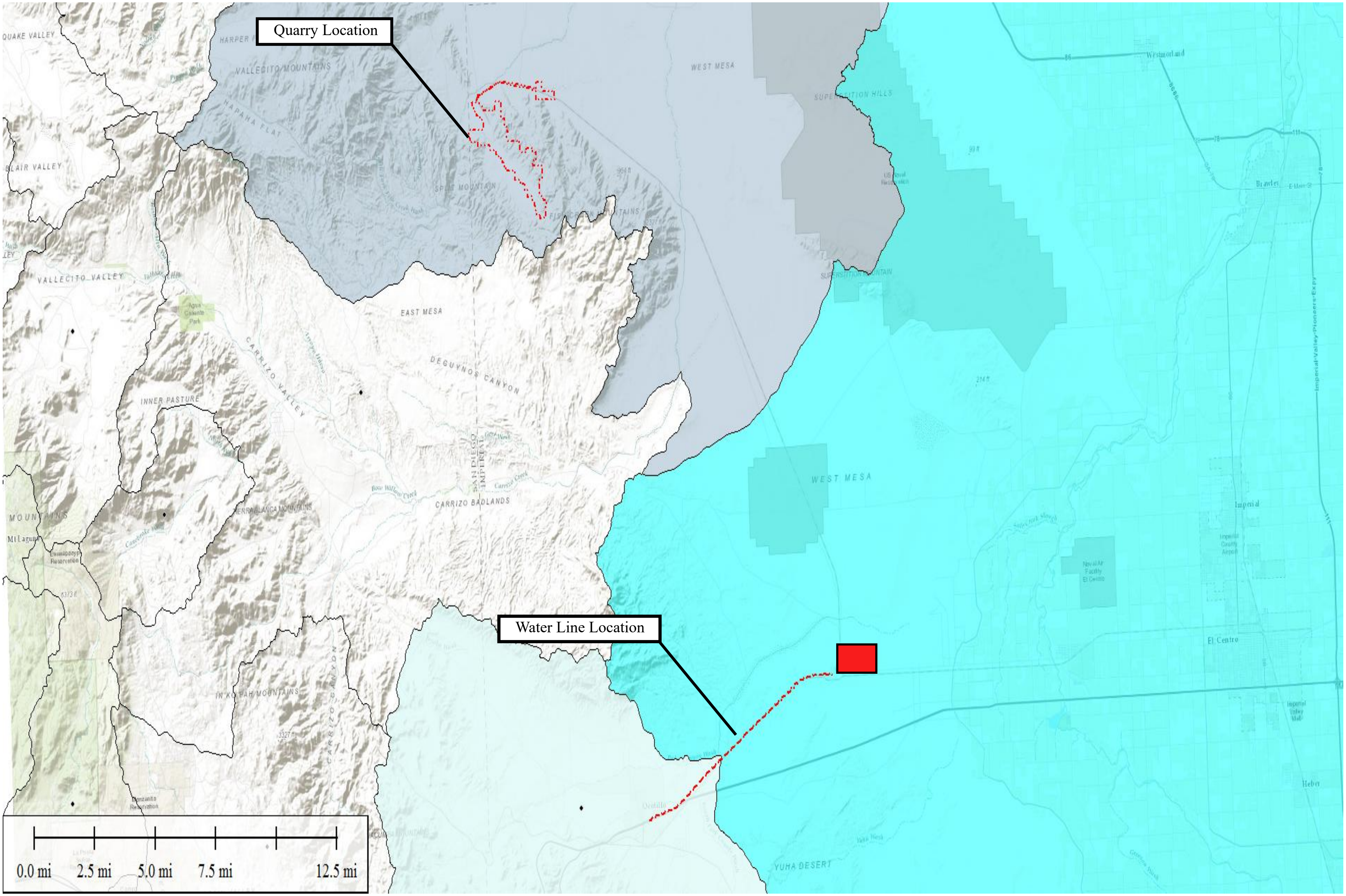

Figure 5

Hydrologic Unit Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

🟥	Plaster City Plant Location	▭	Imperial Hydrologic Unit Coyote Wells
⬚	Plaster City QuarryLocation	🟦	Imperial Hydrologic Unit Brawley
- - -	Water Line Replacement Location	▨	Anza Borrego Hydrologic Unit

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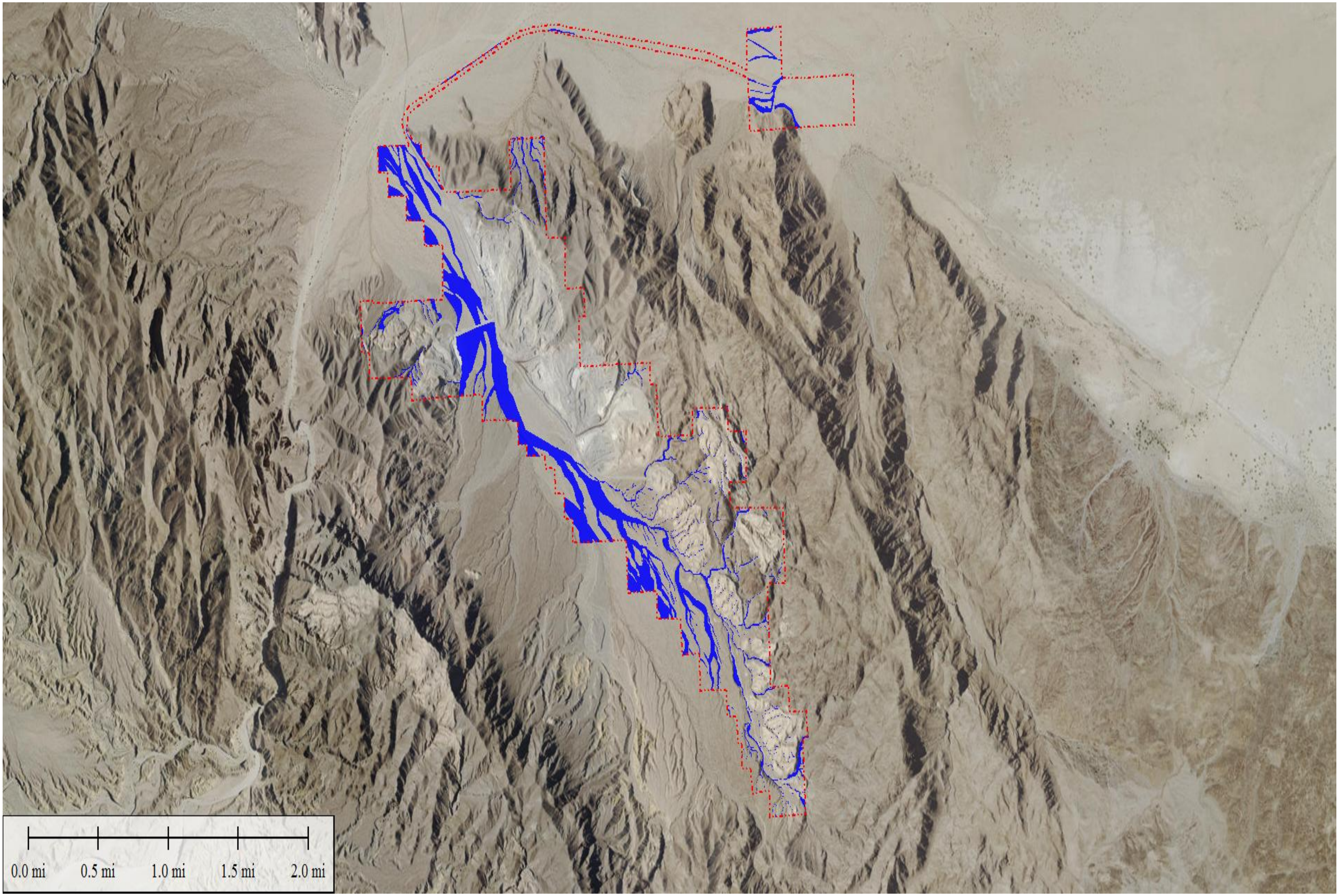

Figure 6

Plaster City Mine Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

▭	Plaster City Quarry Location
🟦	326 Acres State and Federal Jurisdictional Streams

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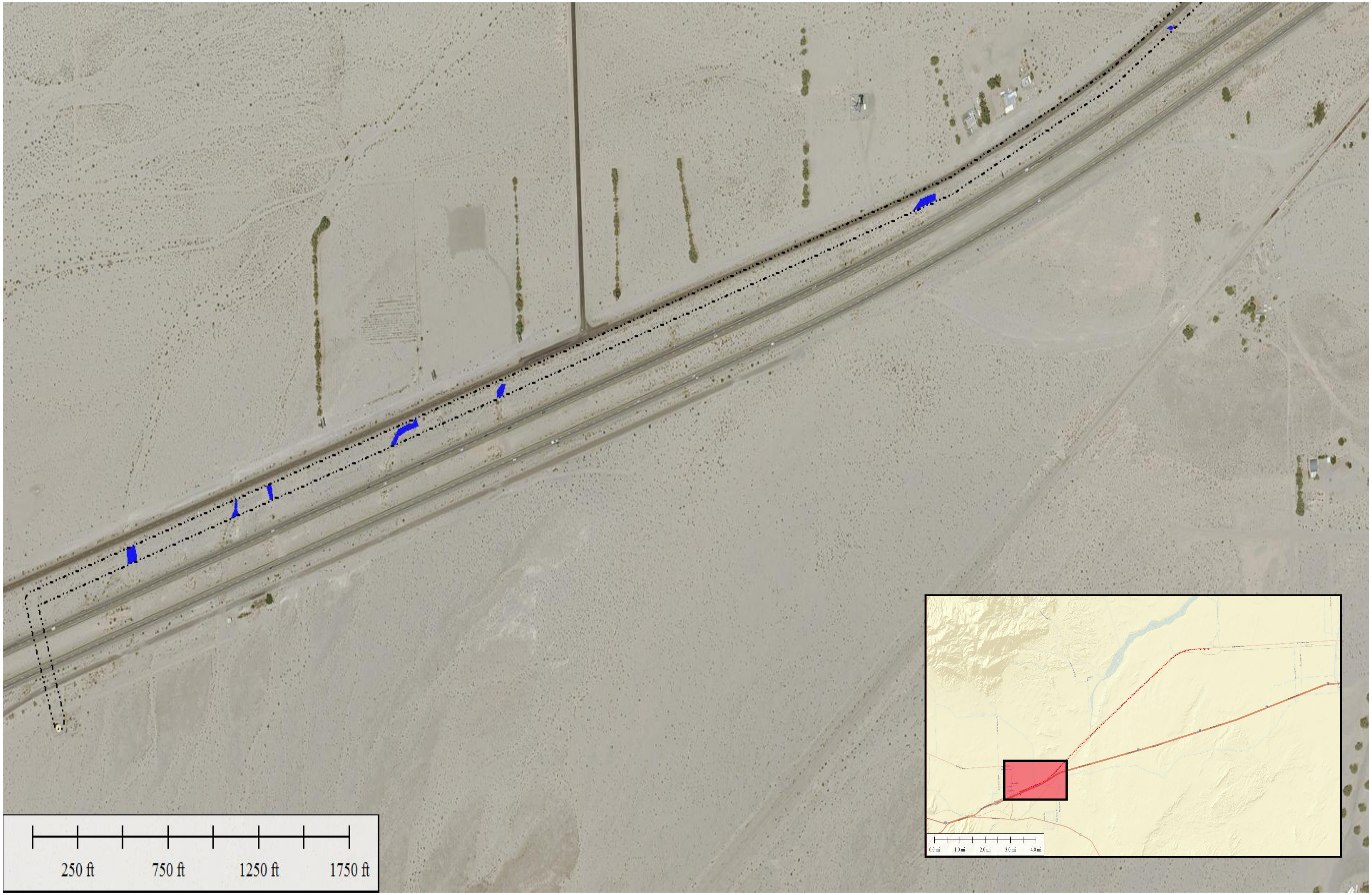

Figure 7 (1 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Hernandez Environmental Services

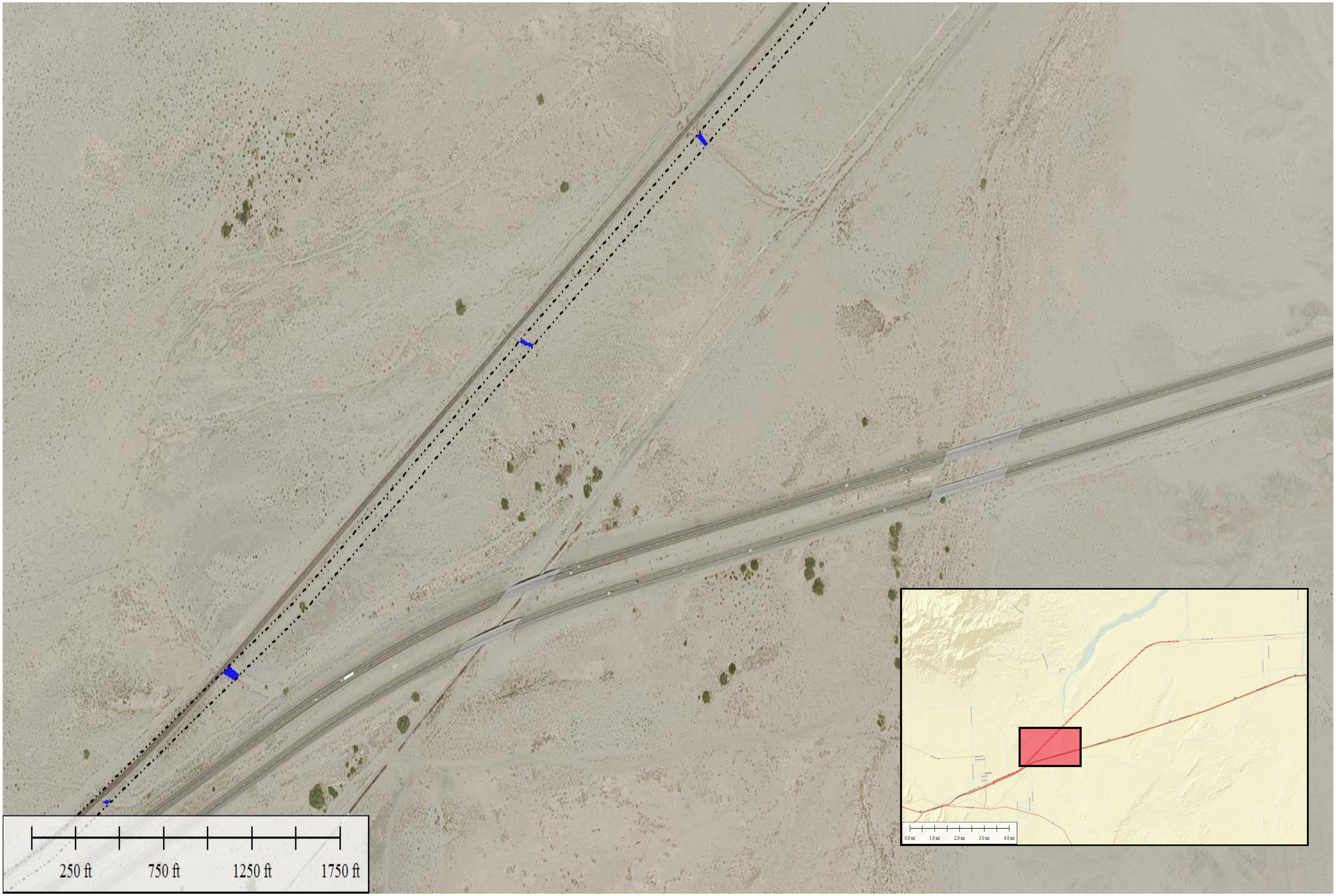

Figure 7 (2 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Environmental
Services

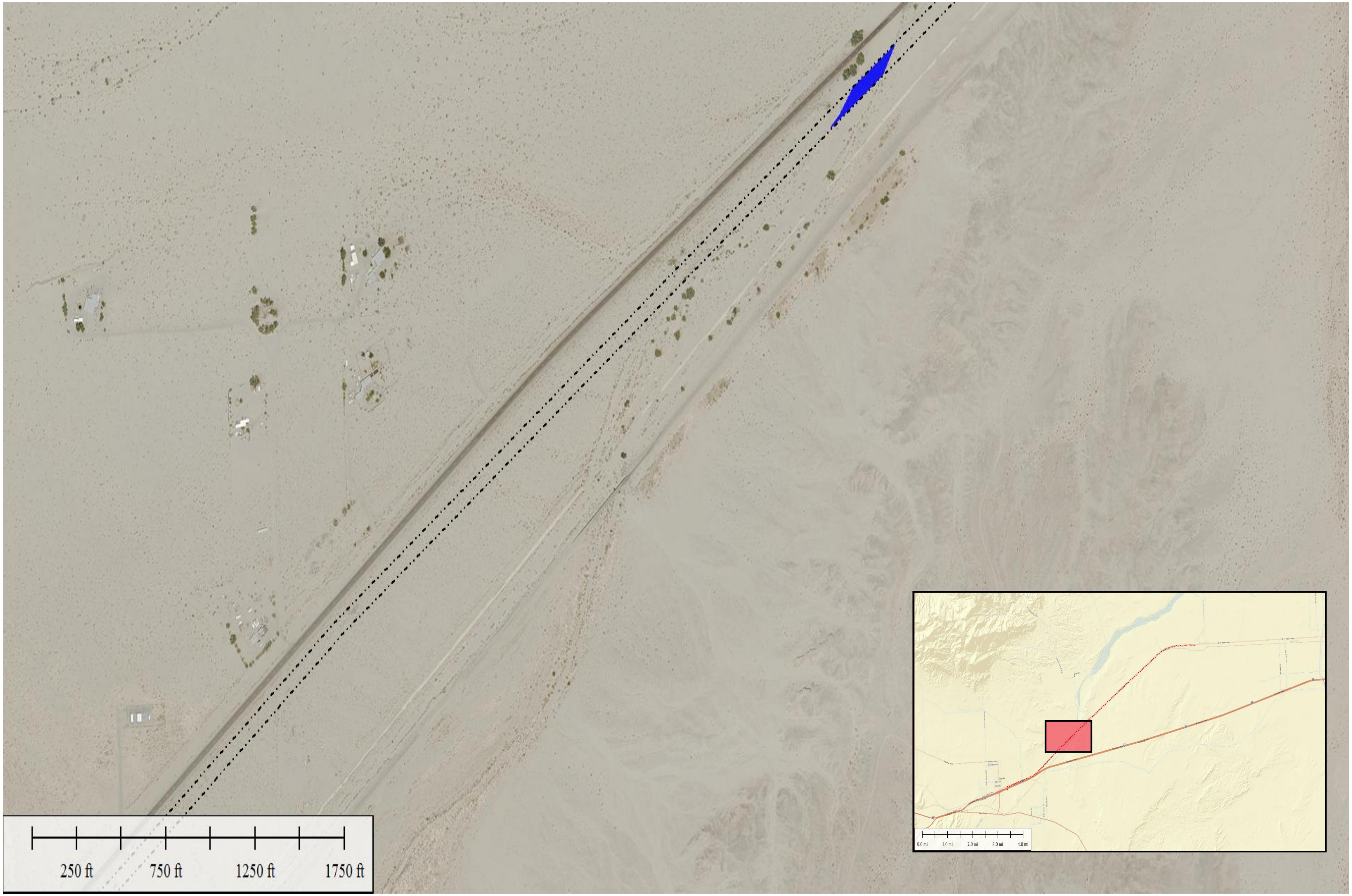

Figure 7 (3 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Environmental
Services

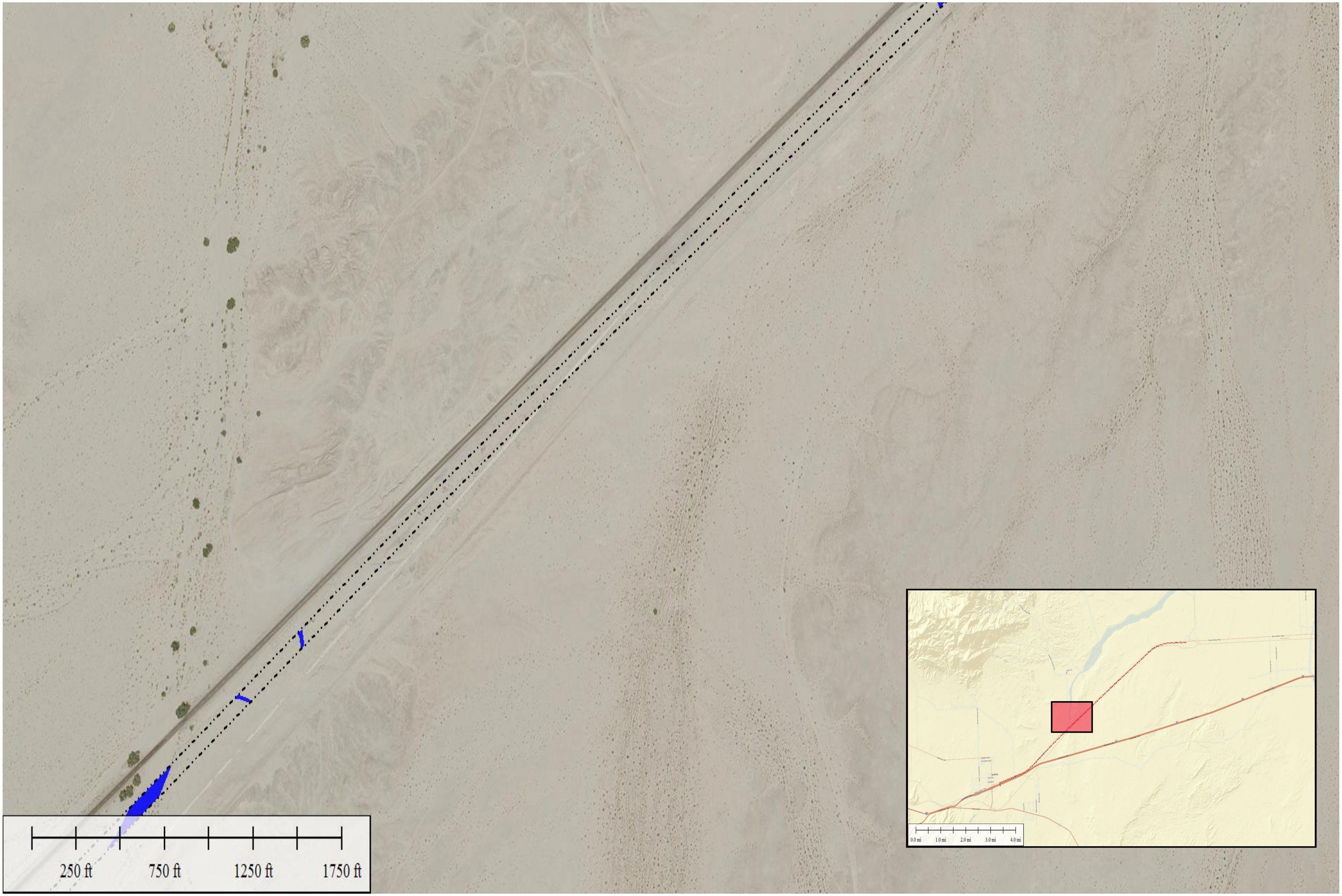

Figure 7 (4 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Hernandez
Environmental
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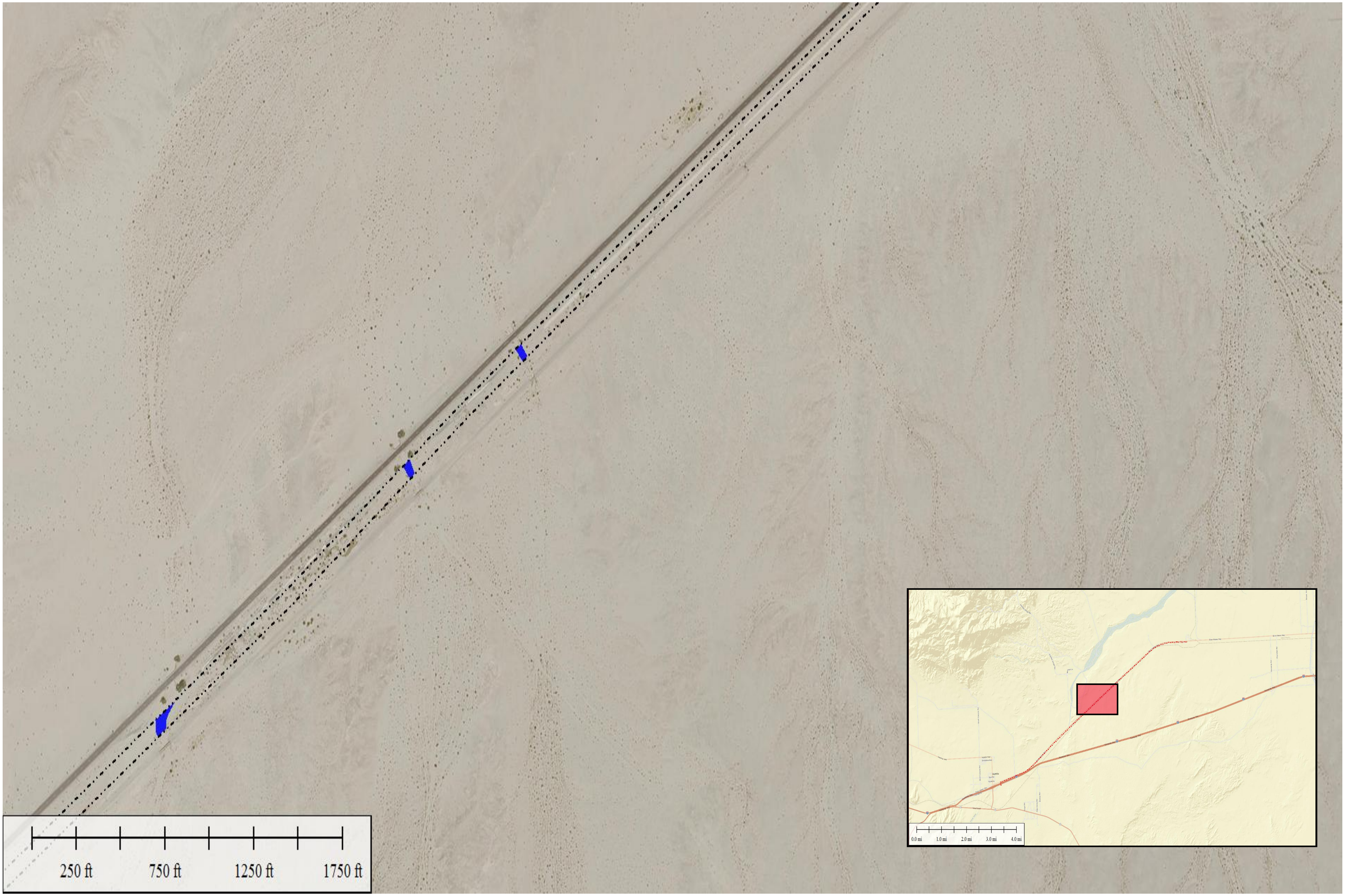

Figure 7 (5 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project

Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Hernandez
Environmental
Services

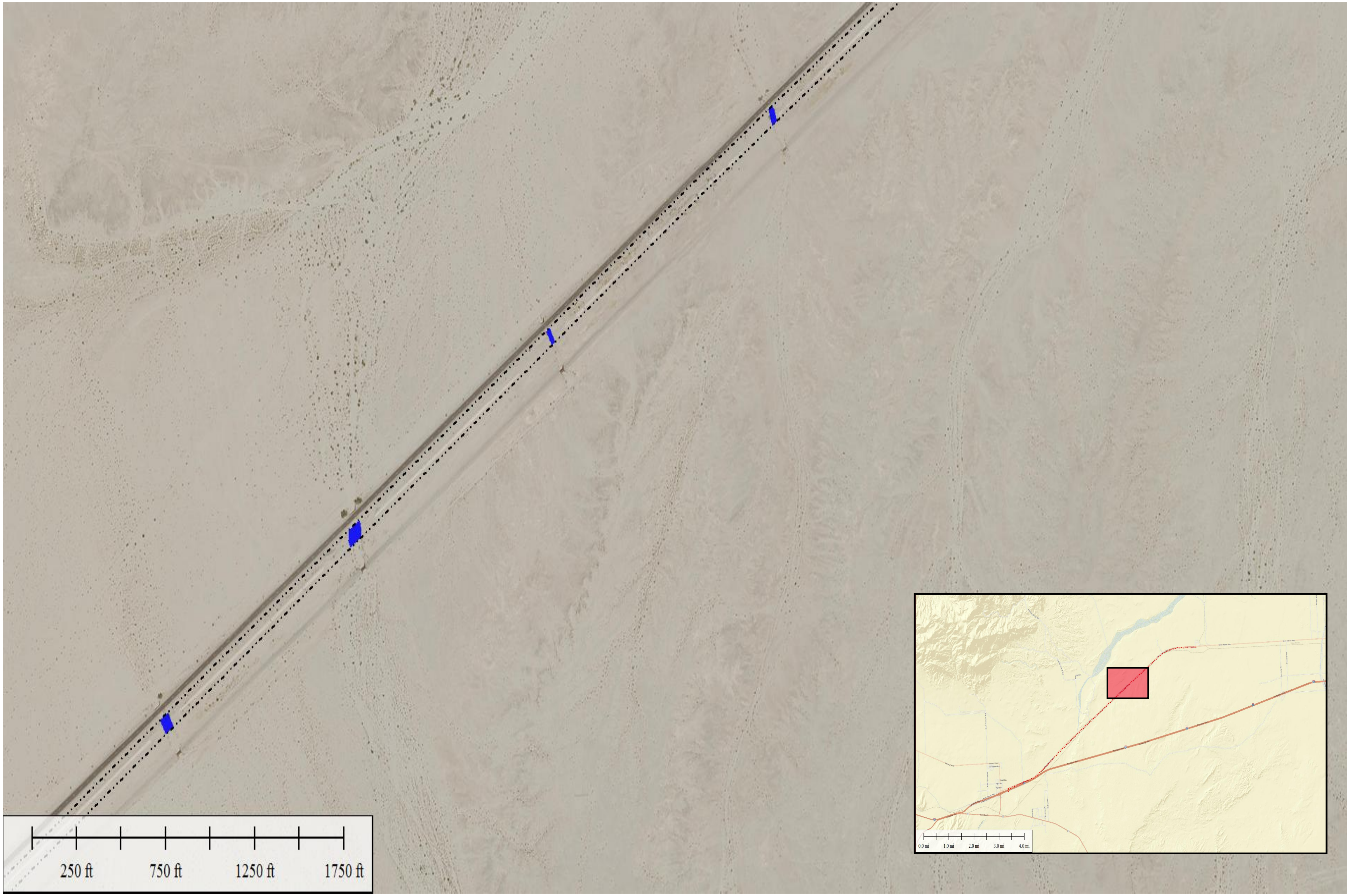

Figure 7 (6 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project

Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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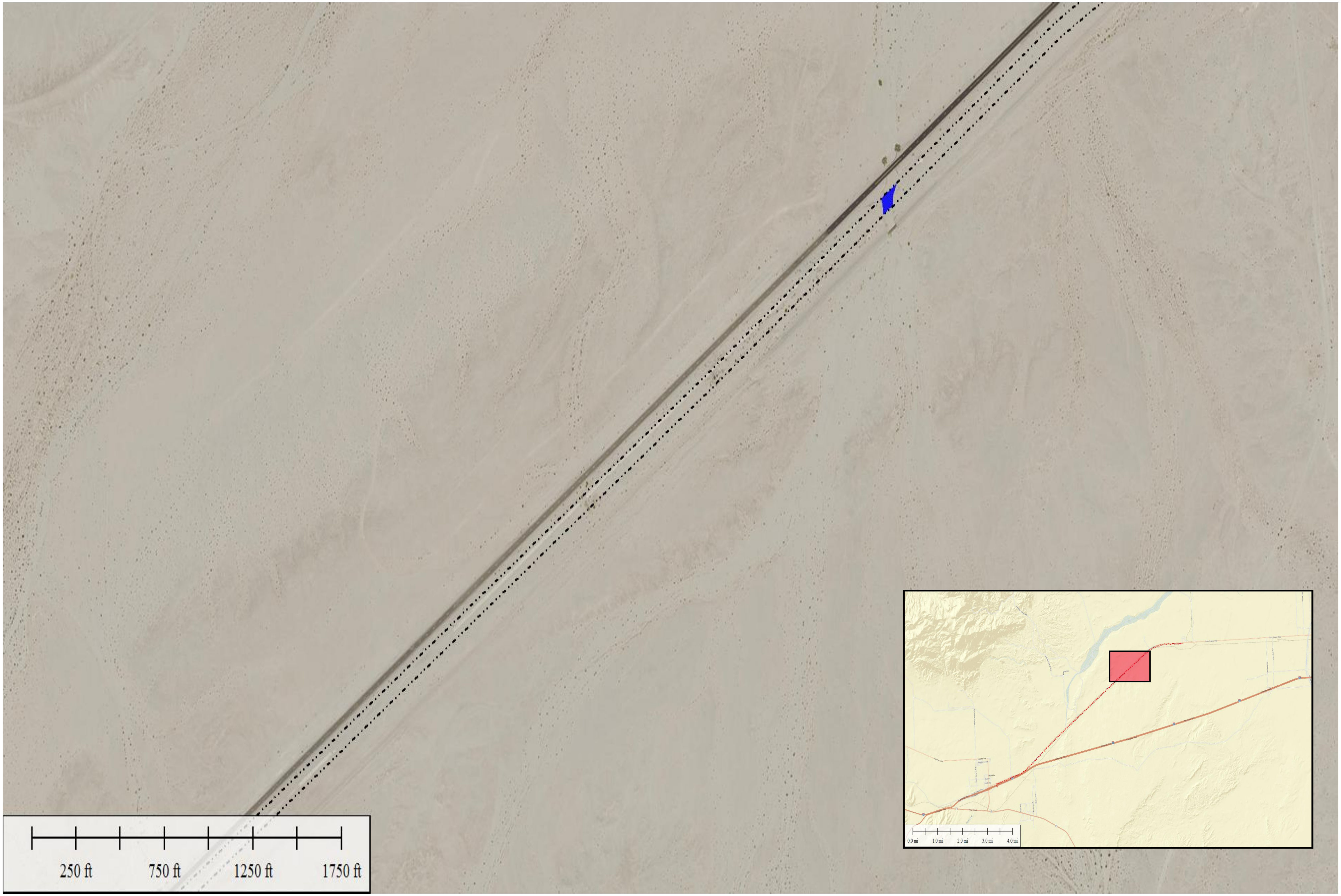
Hernandez
Environmental
Services



Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

Figure 7 (7 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

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Environmental
Services

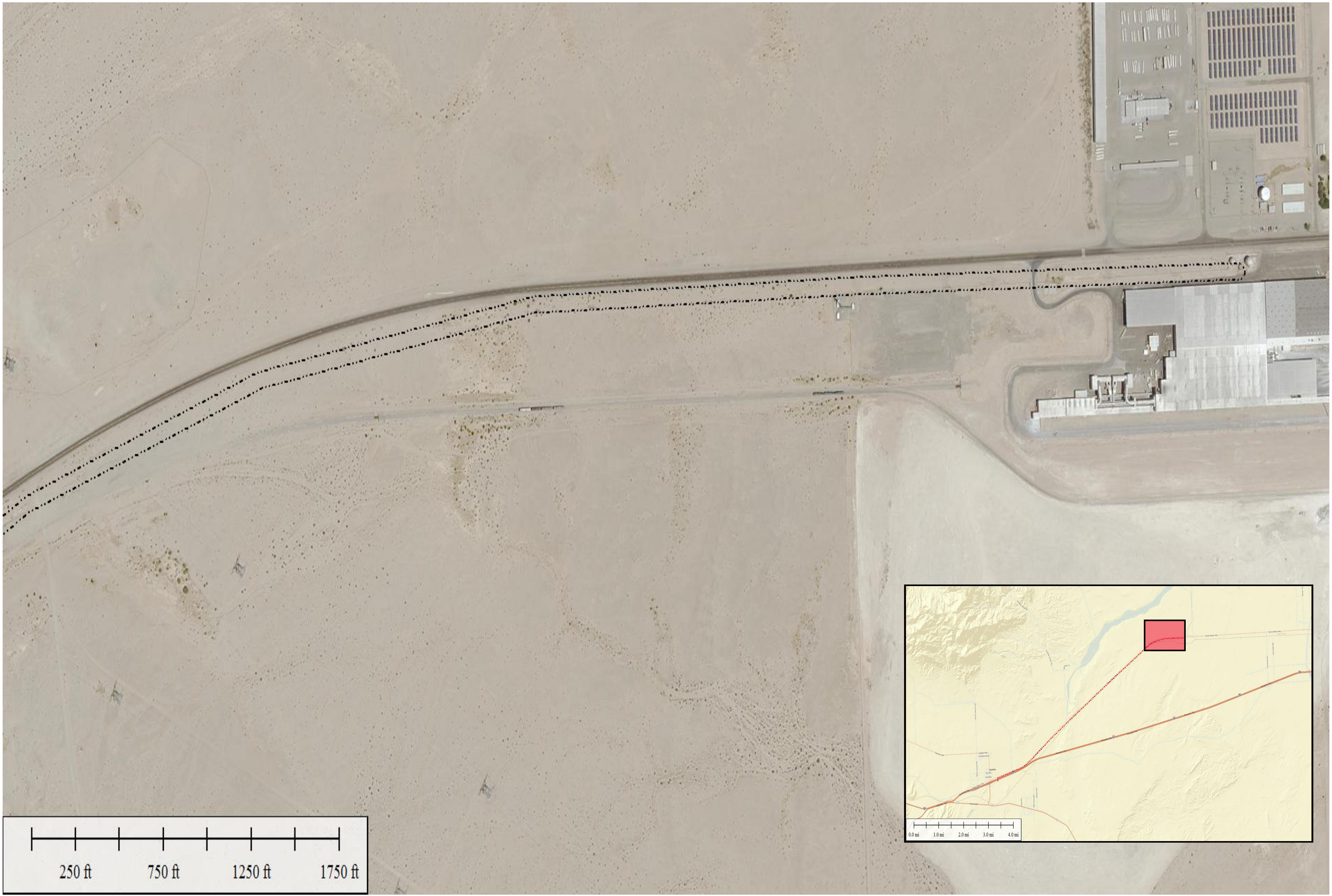

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Figure 7 (8 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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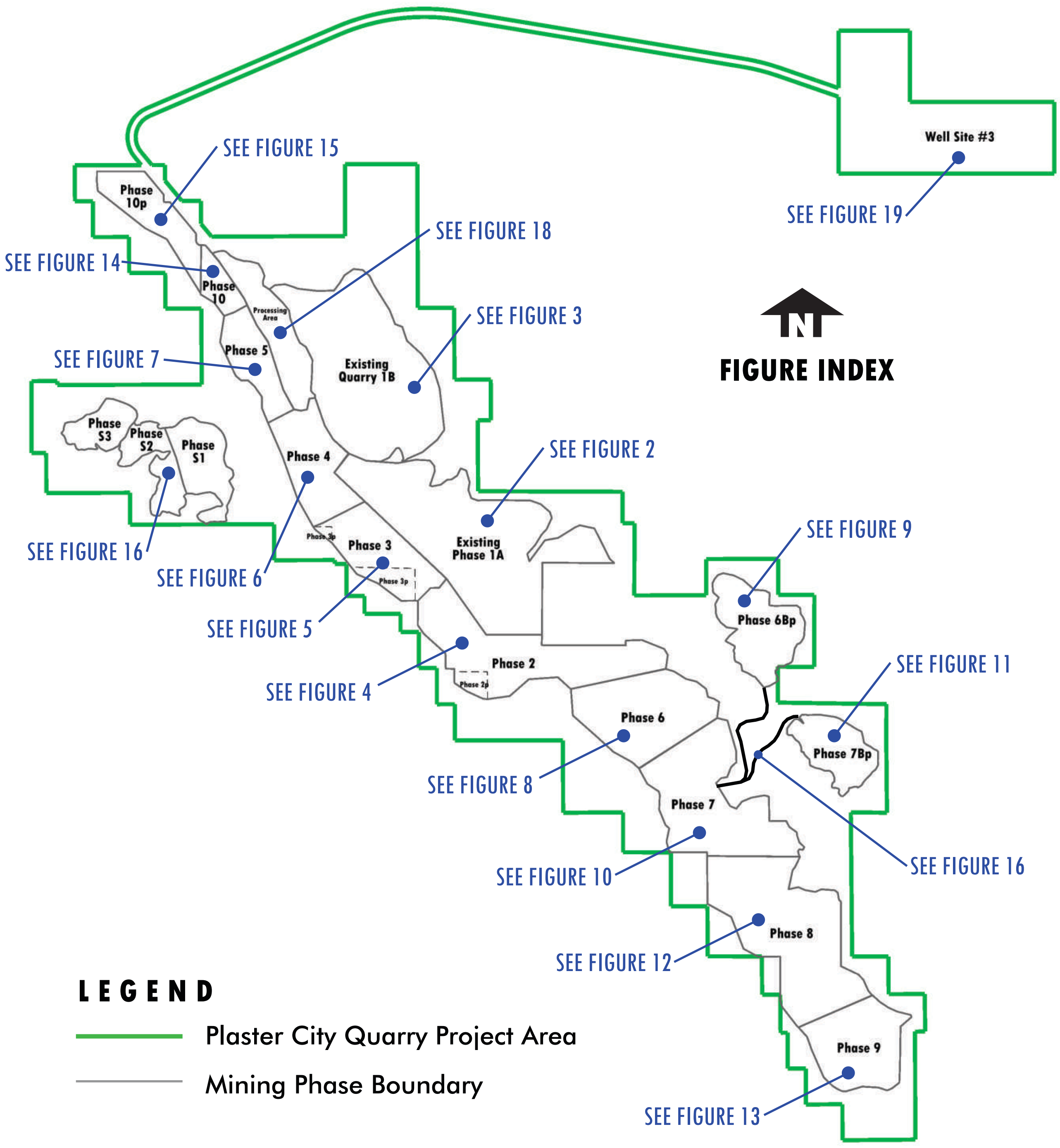
APPENDIX A



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

		50' Wide Quarry Wash Diversion Berm					
		Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
Item	Status	Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
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Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

JURISDICTIONAL WATERS IMPACT CALCULATIONS - SUMMARY

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 1

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Jurisdictional Waters Impact Areas

No Impacts

LEGEND

▬	Mining Phase Boundary
∫ ∫ ∫ ∫	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1A

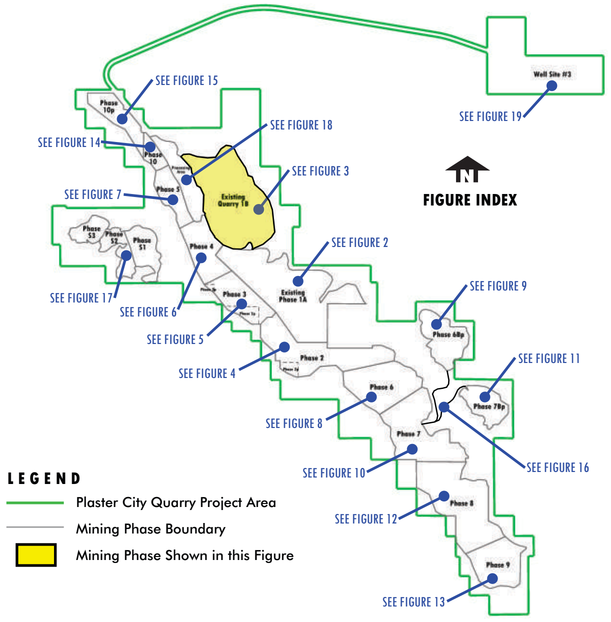
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 2

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	180	0.03

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



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🟩 Plaster City Quarry Project Area

— Mining Phase Boundary

🟨 Mining Phase Shown in this Figure

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🟨 Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

▪▪▪▪▪▪▪▪ Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1B

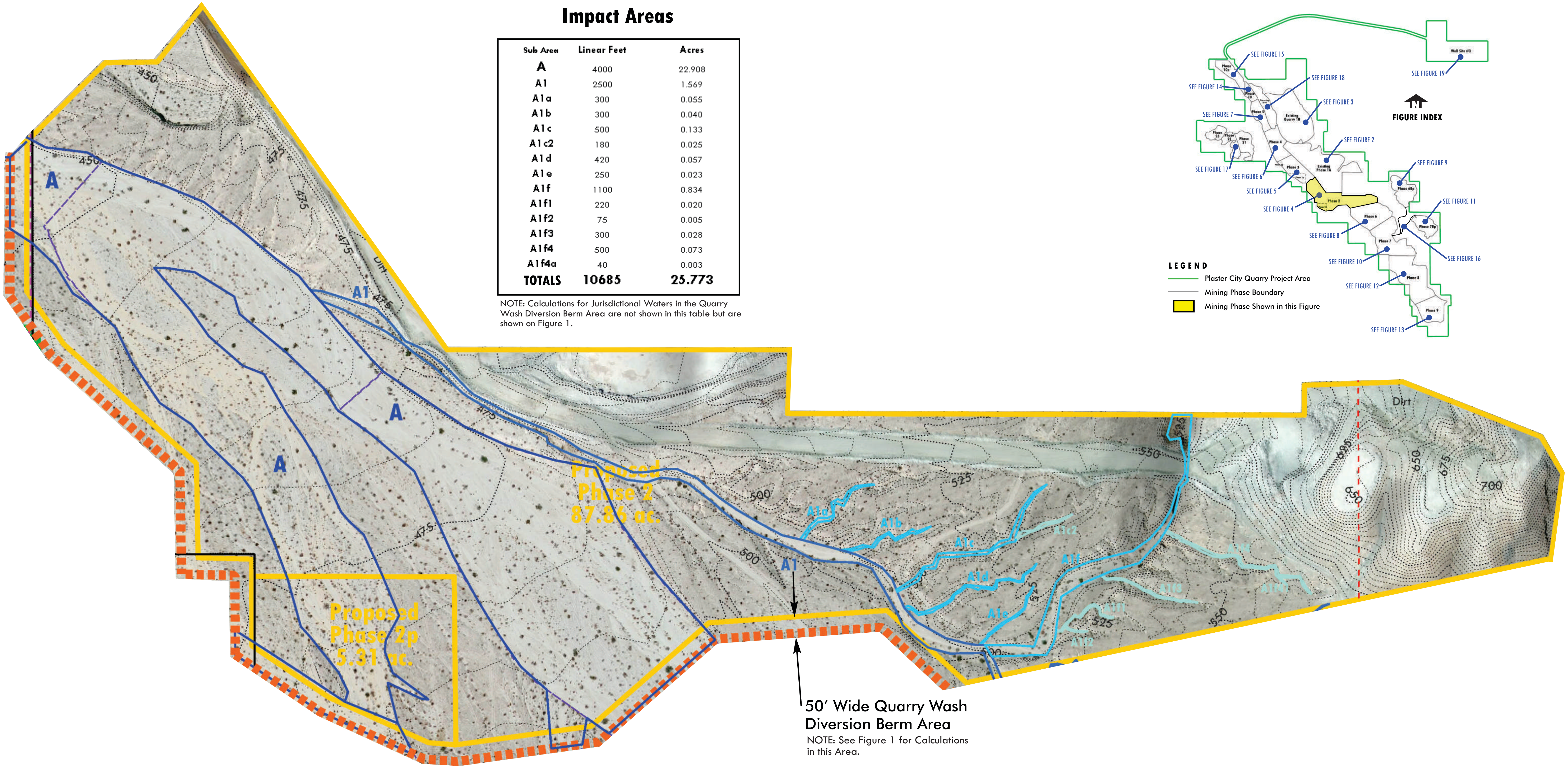
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 3

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	4000	22.908
A1	2500	1.569
A1a	300	0.055
A1b	300	0.040
A1c	500	0.133
A1c2	180	0.025
A1d	420	0.057
A1e	250	0.023
A1f	1100	0.834
A1f1	220	0.020
A1f2	75	0.005
A1f3	300	0.028
A1f4	500	0.073
A1f4a	40	0.003
TOTALS	**10685**	**25.773**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area
NOTE: See Figure 1 for Calculations in this Area.

LEGEND

🟨	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
▪▪▪▪▪▪▪	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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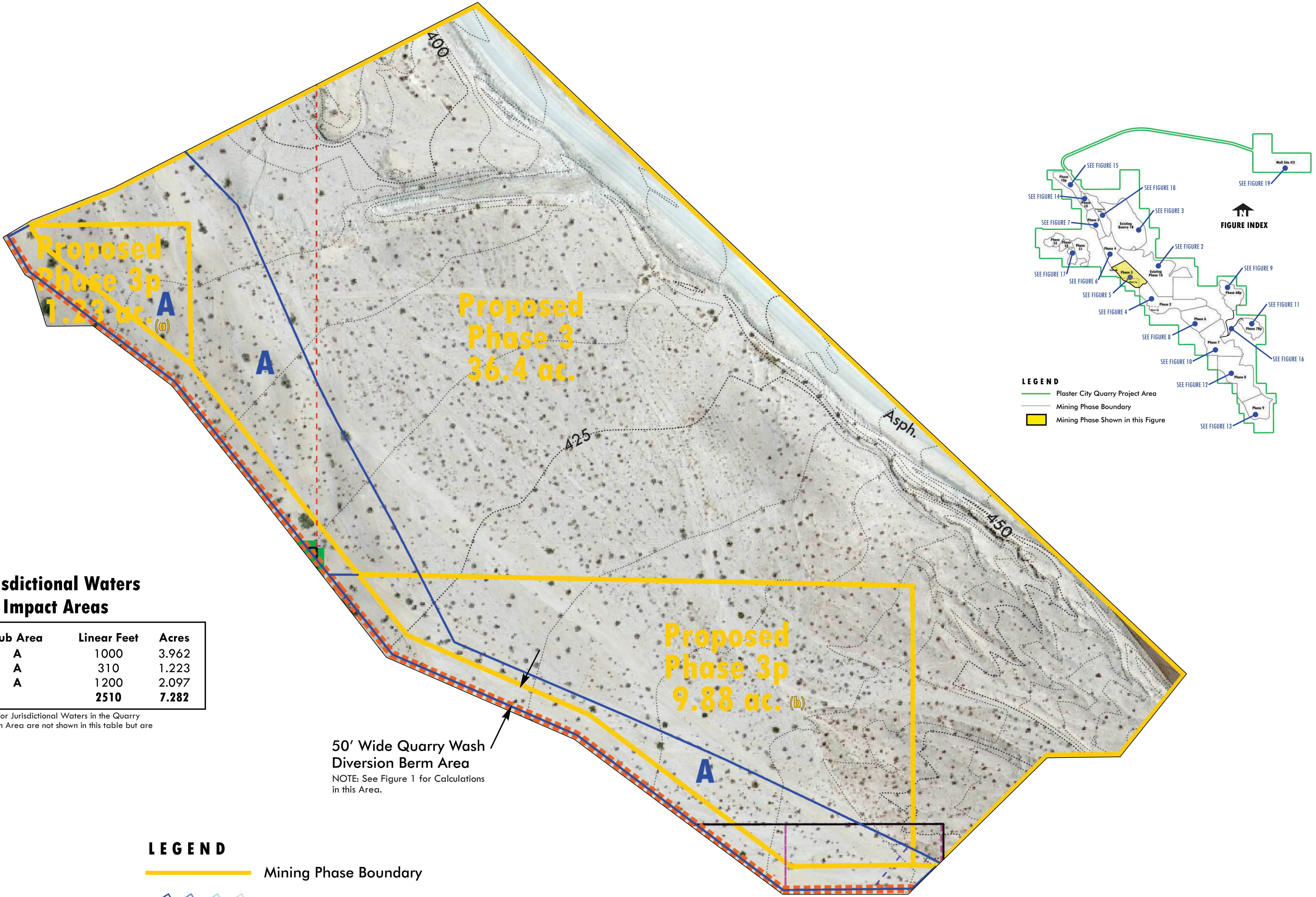
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 2

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 4



Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
3	A	1000	3.962
3p (a)	A	310	1.223
3p (b)	A	1200	2.097
TOTALS		**2510**	**7.282**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

🟨	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
🟥 🟥 🟥 🟥	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES 3 and 3p

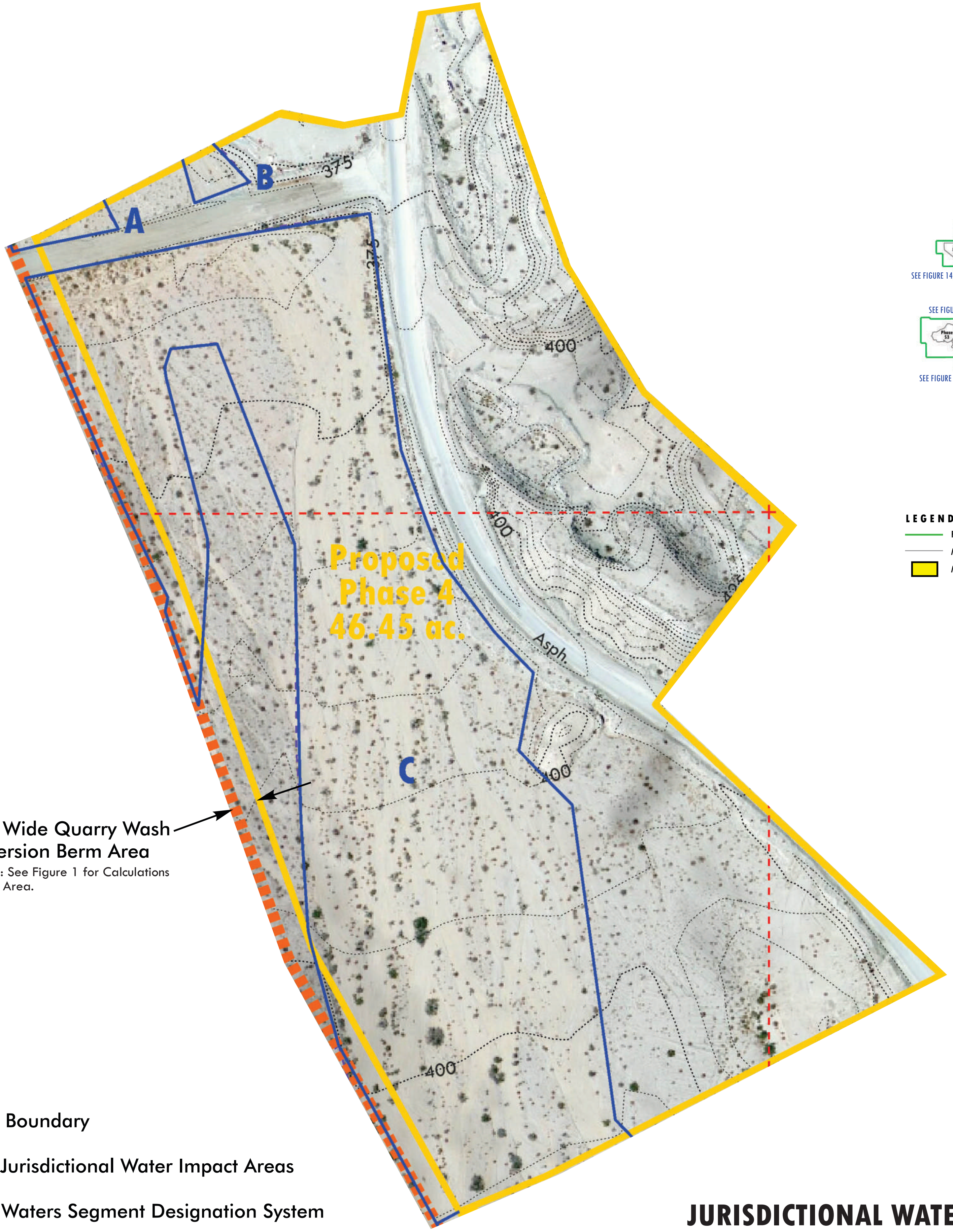
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 5

Jurisdictional Waters Impact Areas

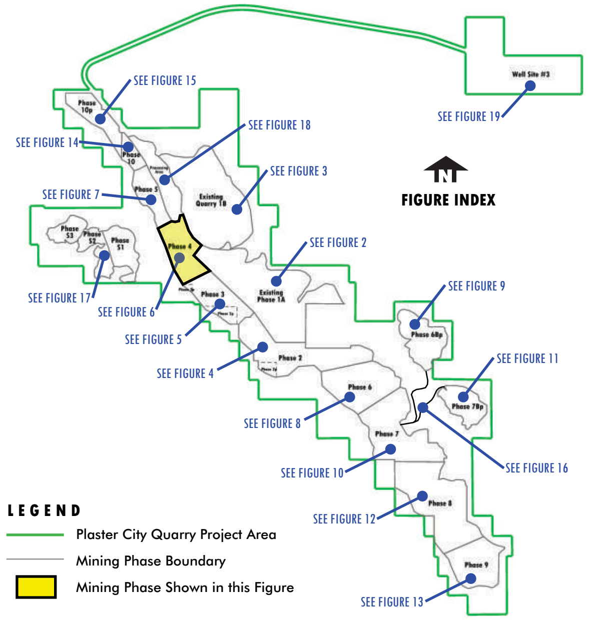
Sub Area	Linear Feet	Acres
A	30	0.121
B	85	0.182
C	2600	19.803
TOTALS	**2715**	**20.106**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



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━	Mining Phase Boundary
A A3 A3a A3a1	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 4

SEIS - United States Gypsum Company - Plaster City Quarry

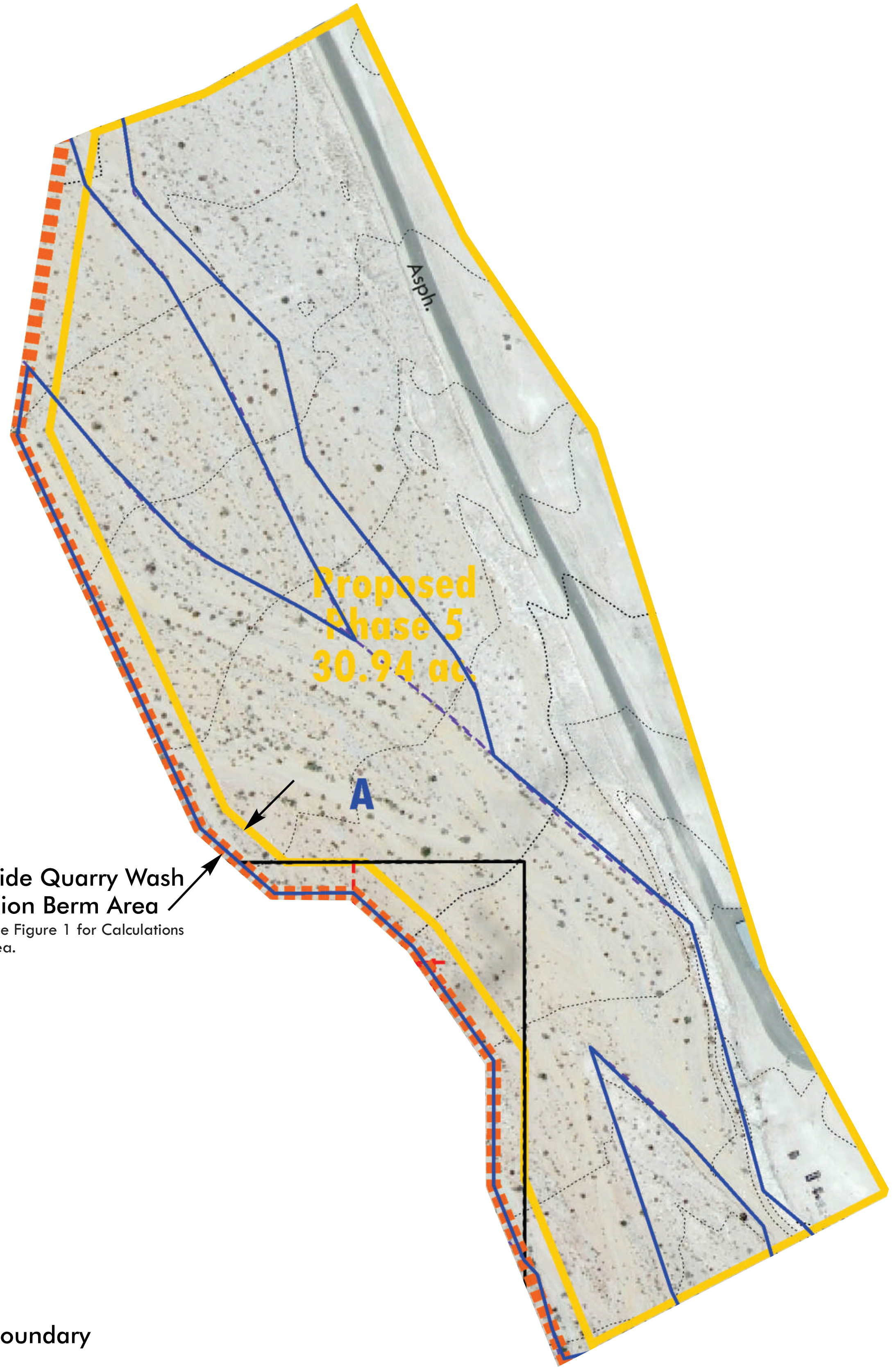
County of Imperial, California

Figure 6

Jurisdictional Waters Impact Areas

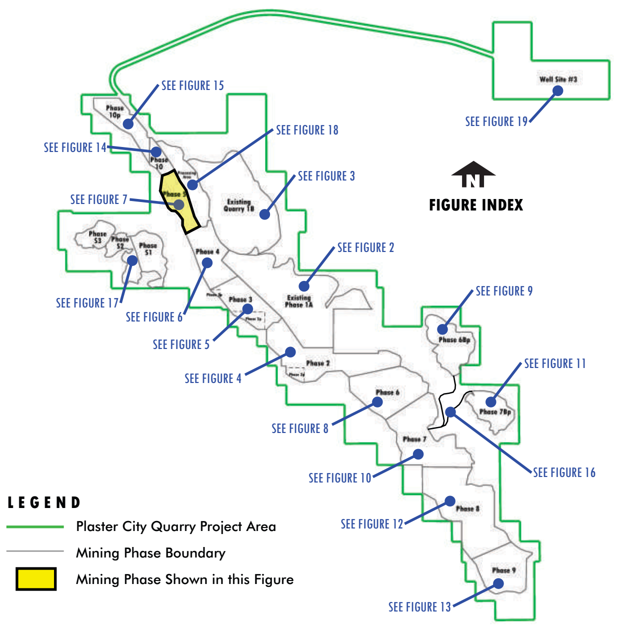
Sub Area	Linear Feet	Acres
A	3000	12.276

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

■ ■ ■ ■ ■ ■ ■ ■ Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 5

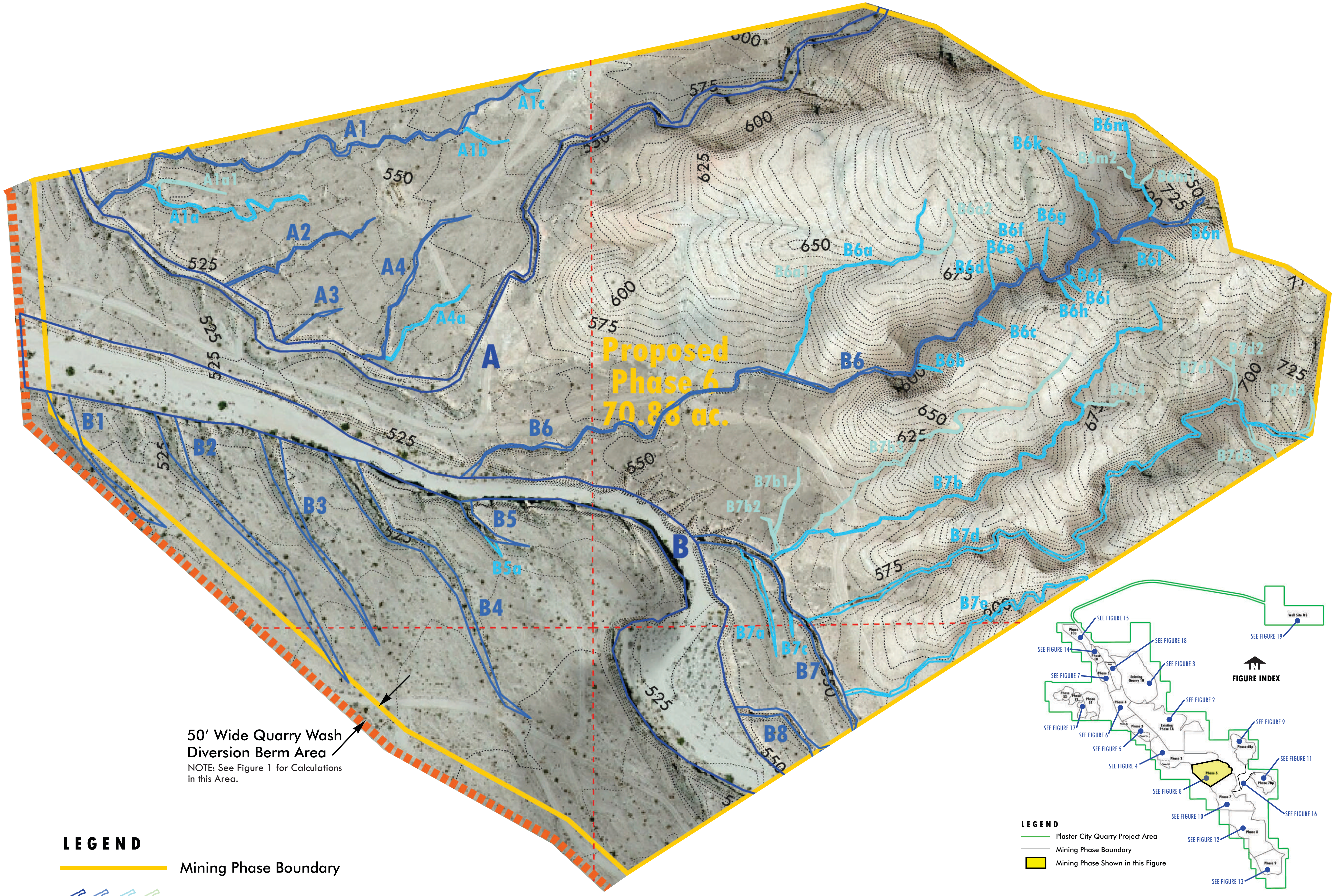
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 7

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2450	0.968
A1	1165	0.117
A1a	475	0.041
A1a1	161	0.013
A1b	111	0.009
A1c	50	0.003
A2	390	0.035
A3	150	0.012
A4	440	0.042
A4a	265	0.021
B	2200	4.205
B1	130	0.064
B2	700	0.27
B3	530	0.189
B4	750	0.34
B5	825	0.05
B5a	63	0.006
B6	2044	0.242
B6a	575	0.043
B6a1	38	0.002
B6a2	165	0.010
B6b	60	0.005
B6c	65	0.004
B6d	72	0.003
B6e	35	0.003
B6f	50	0.001
B6g	95	0.007
B6h	60	0.004
B6i	50	0.004
B6j	20	0.001
B6k	222	0.018
B6l	130	0.009
B6m	233	0.015
B6m1	50	0.002
B6m2	45	0.002
B6n	44	0.003
B7	552	0.175
B7a	222	0.039
B7b	1222	0.094
B7b1	203	0.018
B7b2	57	0.004
B7bs	750	0.060
B7c	52	0.004
B7d	1500	0.232
B7d1	121	0.014
B7d2	25	0.001
B7b3	100	0.013
B7b4	105	0.012
B7e	684	0.091
B8	237	0.064
TOTALS	**20737**	**7.584**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



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LEGEND

🟨 Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

🟧 Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

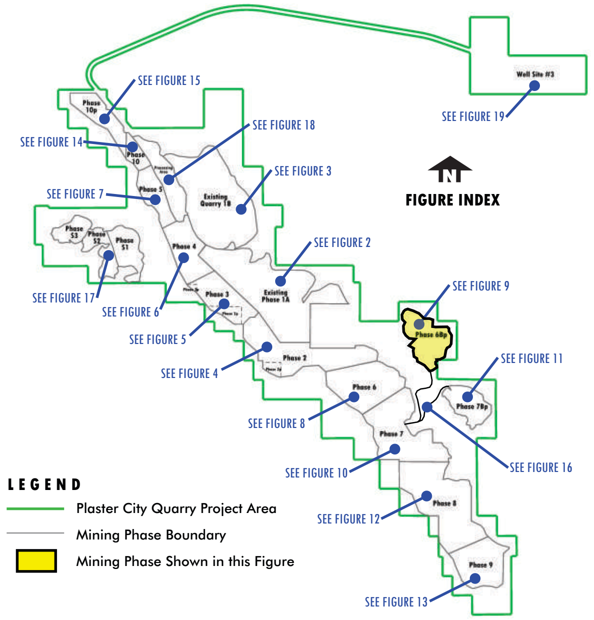
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 8

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	250	0.050
A1	100	0.017
A2	65	0.011
B	850	0.156
B1	280	0.033
B1a	110	0.008
B2	320	0.047
B2a	160	0.019
B3	60	0.002
B4	60	0.007
C	220	0.041
D	25	0.001
E	125	0.016
F	50	0.003
G	650	0.116
G1	250	0.027
G2	280	0.059
G2a	65	0.009
H	850	0.091
H1	190	0.015
I	150	0.012
J	70	0.009
K	900	0.170
K1	88	0.017
TOTALS	**6168**	**0.935**



LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50' Wide Quarry Wash Diversion Berm

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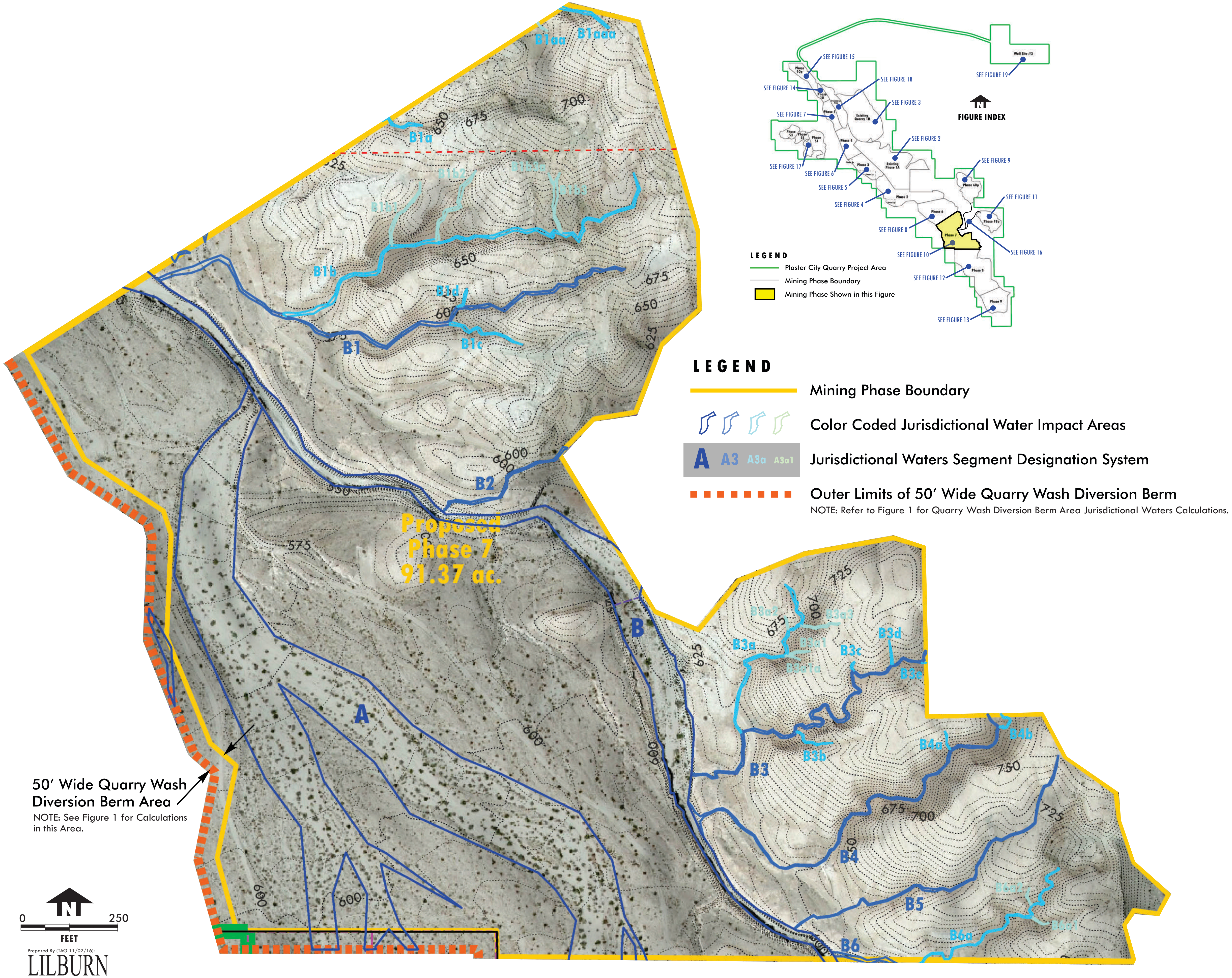
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 9



NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	3200	9.670
B	3000	2.941
B1	1500	0.229
B1a	100	0.009
B1aa	35	0.001
B1aaa	150	0.017
B1b	1230	0.168
B1c	230	0.023
B1d	65	0.006
B1b1	200	0.020
Bib2	250	0.033
B1b3	175	0.023
B1b3a	35	0.001
B2	410	0.043
B3	1050	0.114
B3a	550	0.062
B3a2	40	0.002
B3a1	75	0.005
B3a1a	30	0.001
B3a3	110	0.009
B3b	120	0.007
B3c	31	0.002
B3d	70	0.004
B3e	10	0.001
B4	1250	0.119
B4a	50	0.002
B4b	75	0.004
B5	1000	0.071
B6	85	0.015
B6a	550	0.035
B6a2	50	0.002
B6a1	40	0.003
TOTALS	**15766**	**13.642**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

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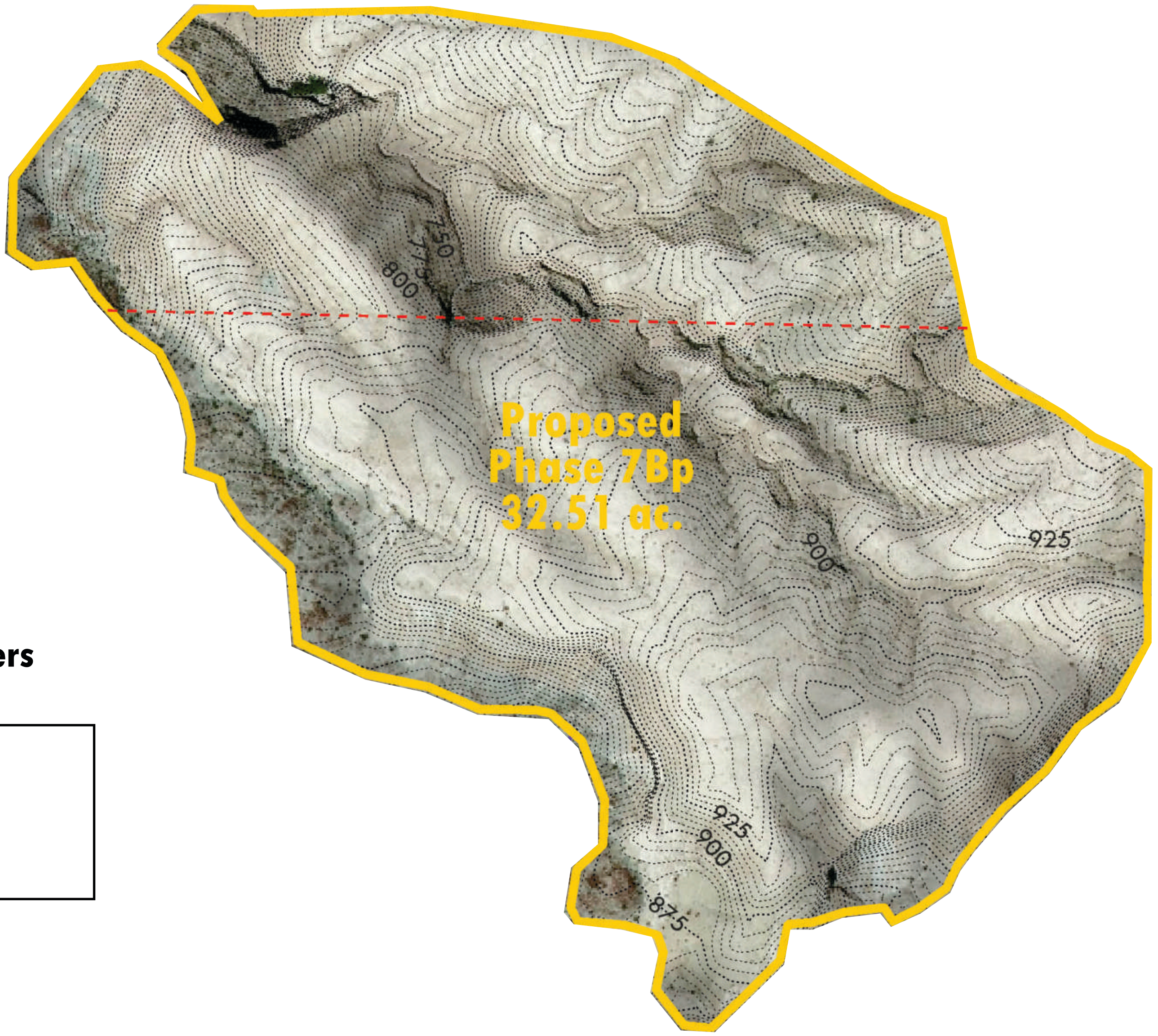
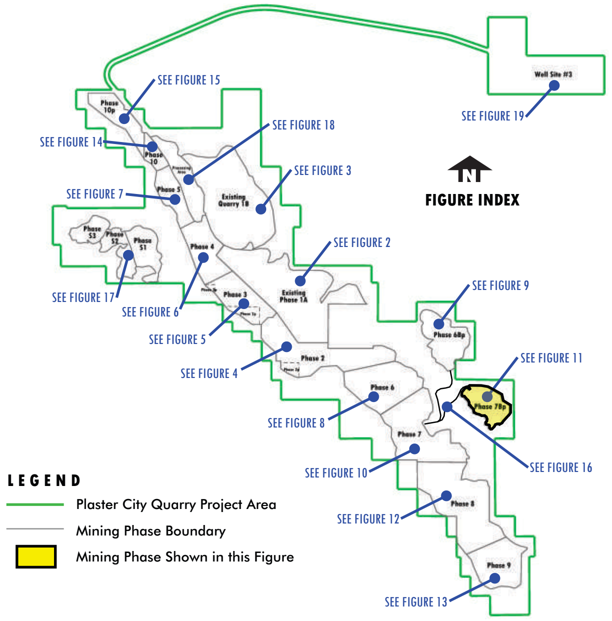
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 10





Jurisdictional Waters Impact Areas

No Impacts

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

■ ■ ■ ■ ■ ■ ■ ■ Outer Limits of 50′ Wide Quarry Wash Diversion Berm

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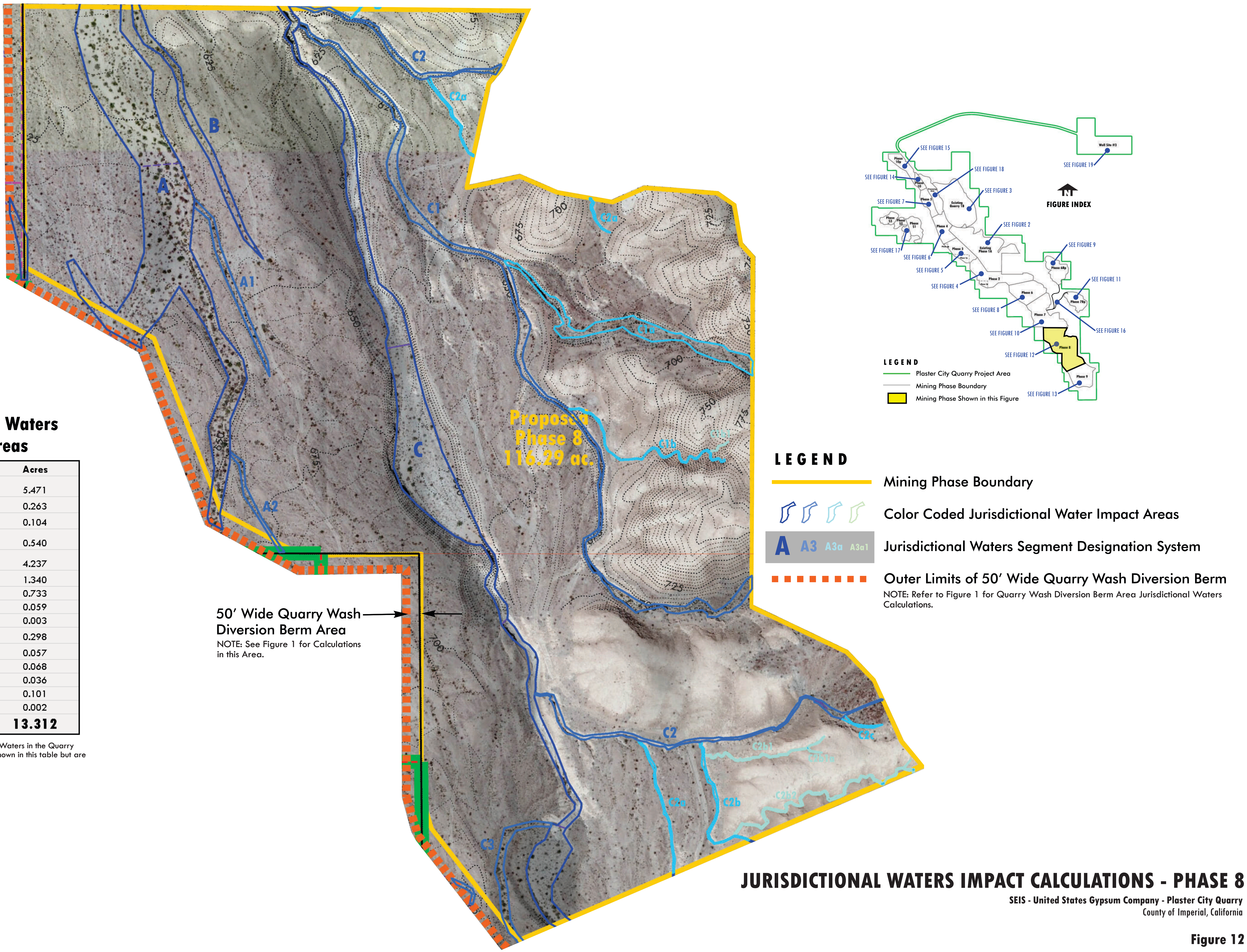
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 11



LEGEND

🟩	Plaster City Quarry Project Area
—	Mining Phase Boundary
🟨	Mining Phase Shown in this Figure

50′ Wide Quarry Wash Diversion Berm Area
NOTE: See Figure 1 for Calculations in this Area.

LEGEND

🟨	Mining Phase Boundary
∫ ∫ ∫ ∫	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2300	5.471
A1	600	0.263
A2	350	0.104
B	1000	0.540
C	3500	4.237
C1	3000	1.340
C1a	1000	0.733
C1b	750	0.059
C1b1	80	0.003
C2	1300	0.298
C2a	500	0.057
C2b	500	0.068
C2b1	450	0.036
C2b2	900	0.101
C2b1a	50	0.002
TOTALS	**16280**	**13.312**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

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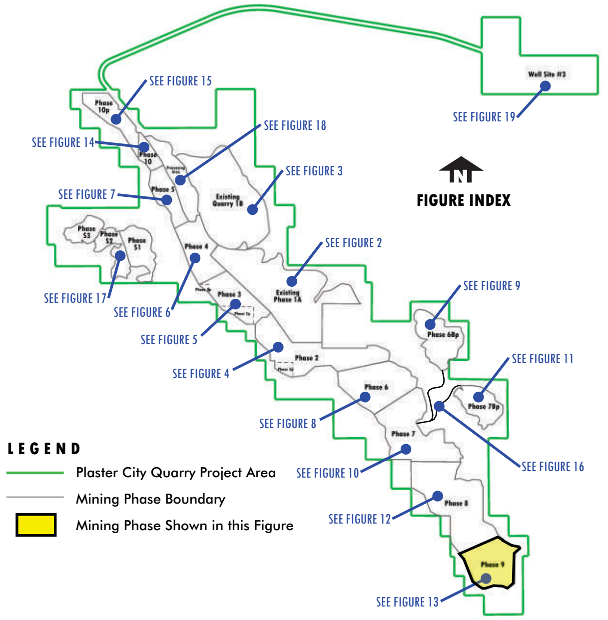
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 8

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

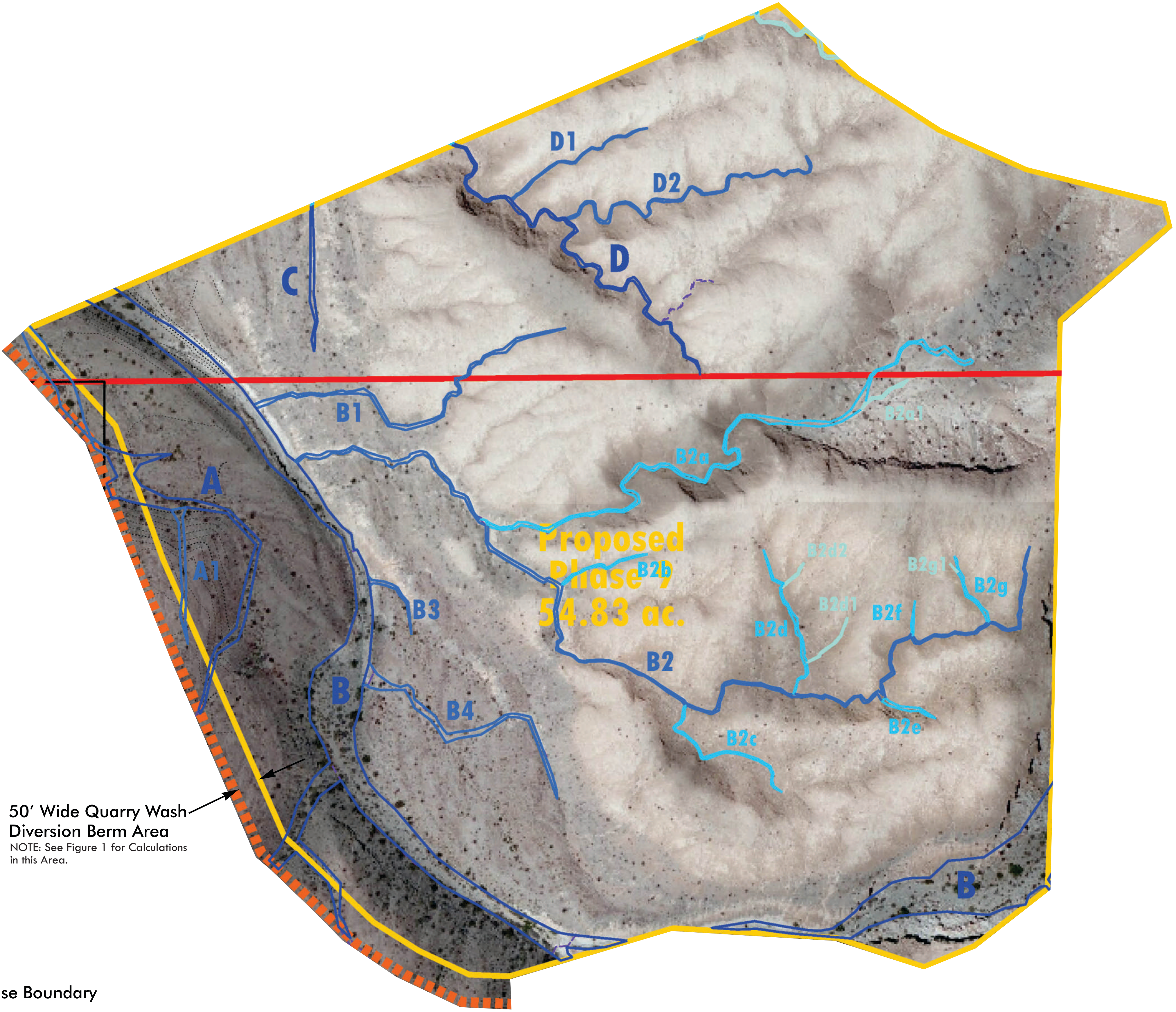
Figure 12



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	600	0.176
A1	200	0.040
B	2000	1.657
B1	700	0.077
B2	2000	0.190
B2a	1200	0.156
B2a1	100	0.007
B2b	150	0.010
B2c	300	0.021
B2d	300	0.022
B2d1	125	0.005
B2d2	60	0.003
B2e	100	0.013
B2f	70	0.003
B2g	140	0.012
B2g1	25	0.001
B3	150	0.012
B4	500	0.114
TOTALS	**8220**	**2.519**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area
NOTE: See Figure 1 for Calculations in this Area.

LEGEND

▬	Mining Phase Boundary
⟋ ⟋ ⟋ ⟋	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
▪ ▪ ▪ ▪ ▪ ▪ ▪	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 9

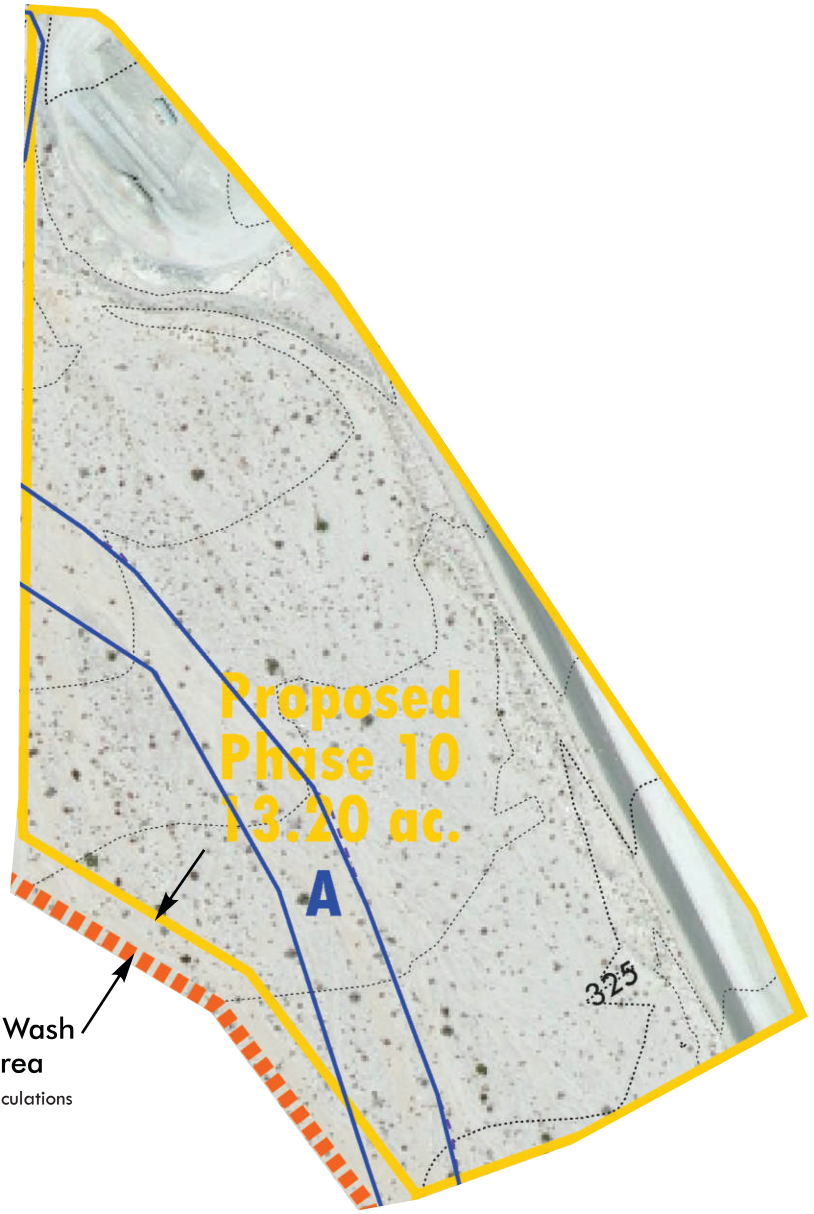
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 13

Jurisdictional Waters Impact Areas

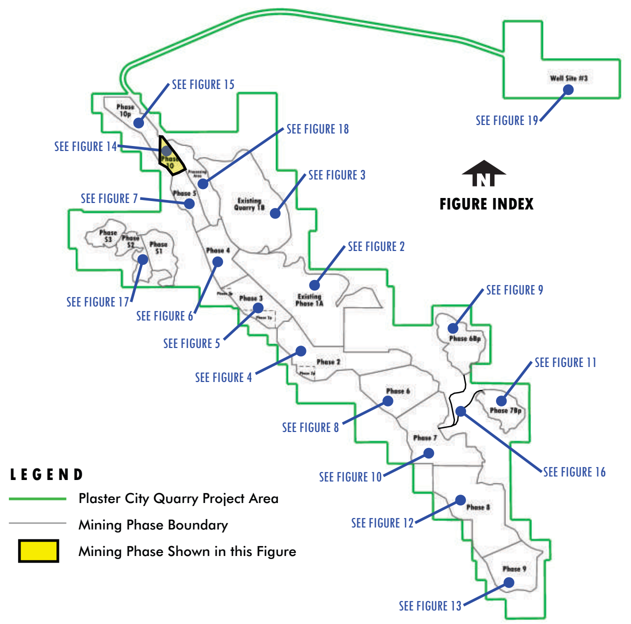
Sub Area	Linear Feet	Acres
A	900	1.572

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



LEGEND

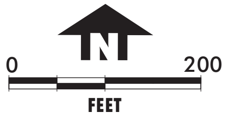
Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.



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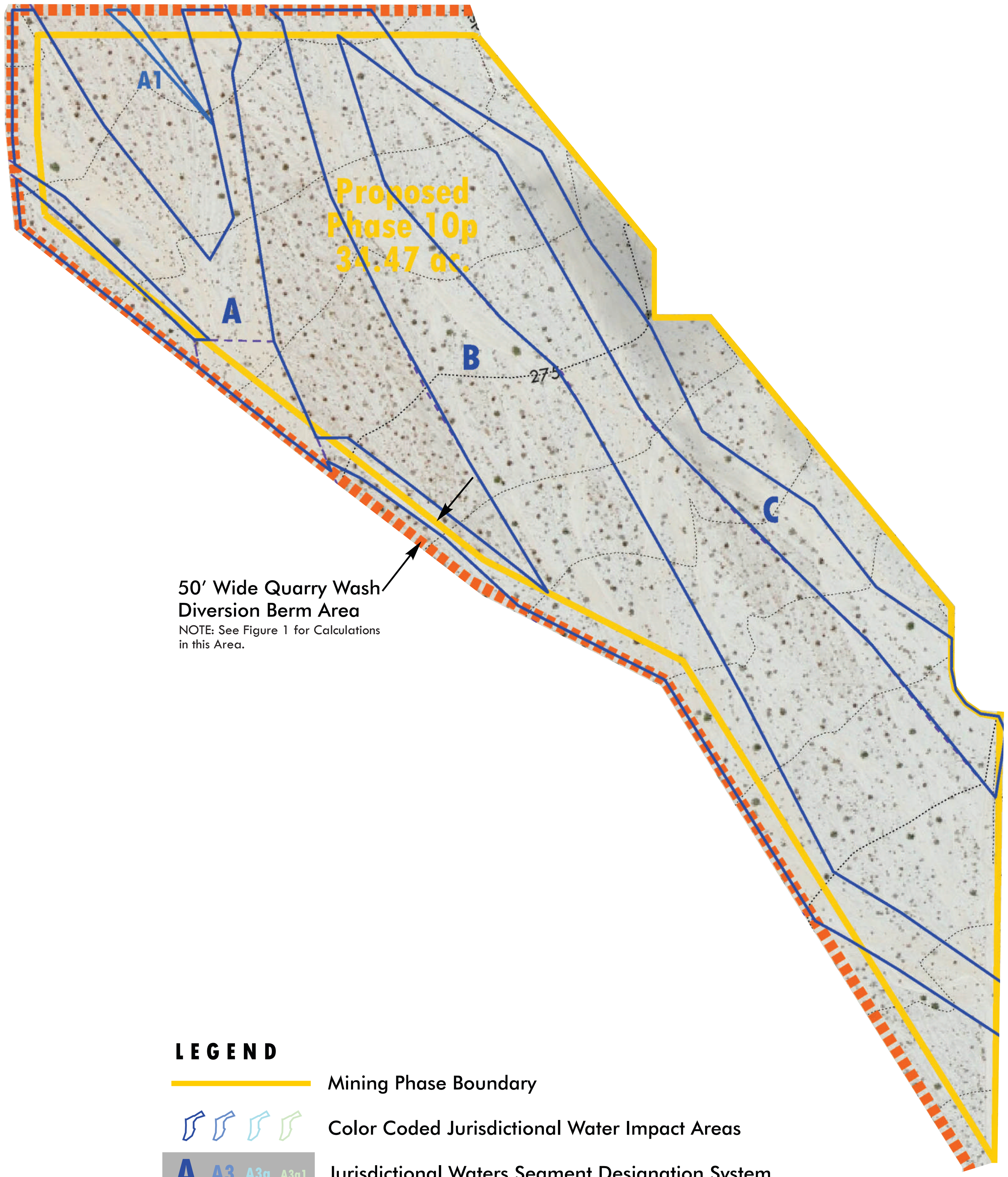
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10

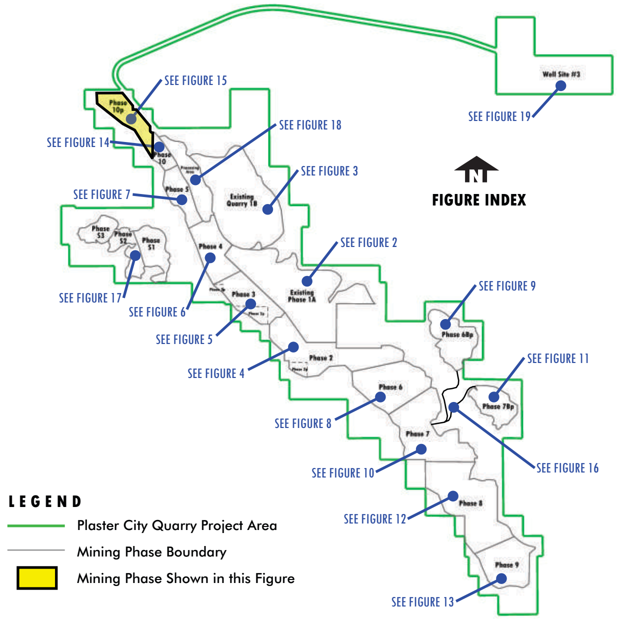
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 14



50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



LEGEND

Plaster City Quarry Project Area

Mining Phase Boundary

🟨 Mining Phase Shown in this Figure

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	1400	3.007
B	2450	7.194
C	2000	3.638
TOTALS	**5850**	**13.839**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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Prepared By (TAG 11/02/16)

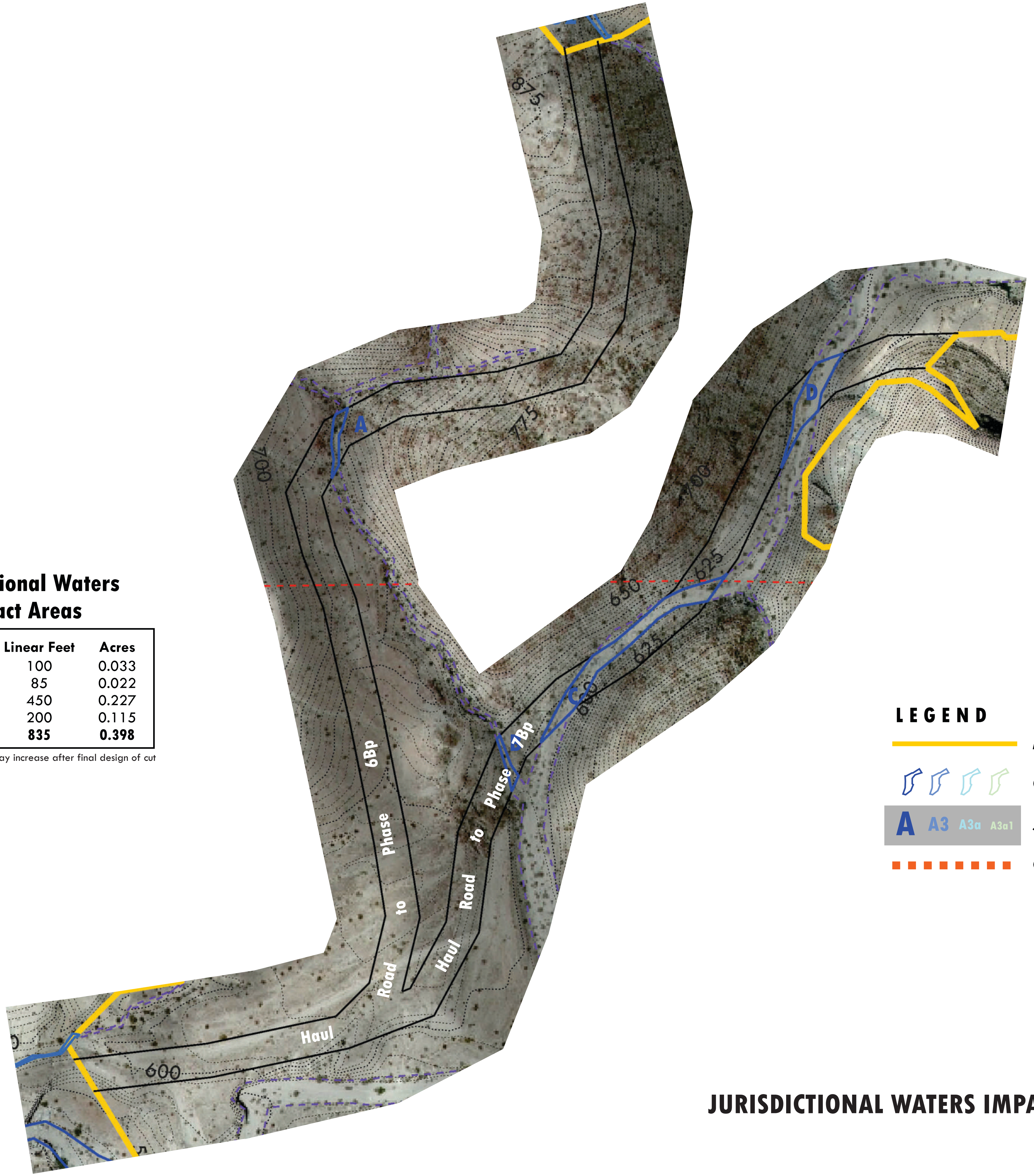
LILBURN CORPORATION

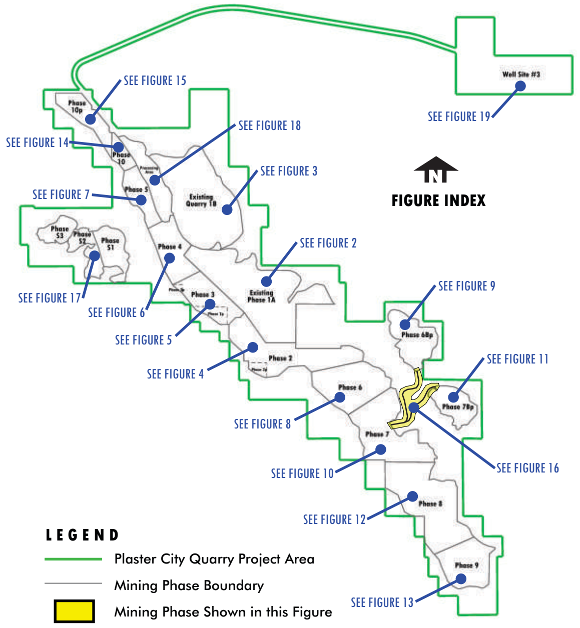
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10p

SEIS - United States Gypsum Company - Plaster City Quarry

County of Imperial, California

Figure 15





Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	100	0.033
B	85	0.022
C	450	0.227
D	200	0.115
TOTALS	**835**	**0.398**

NOTE: Haul Road Impacts may increase after final design of cut and fill slopes.

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

■ ■ ■ ■ ■ ■ ■ ■ Outer Limits of 50' Wide Quarry Wash Diversion Berm

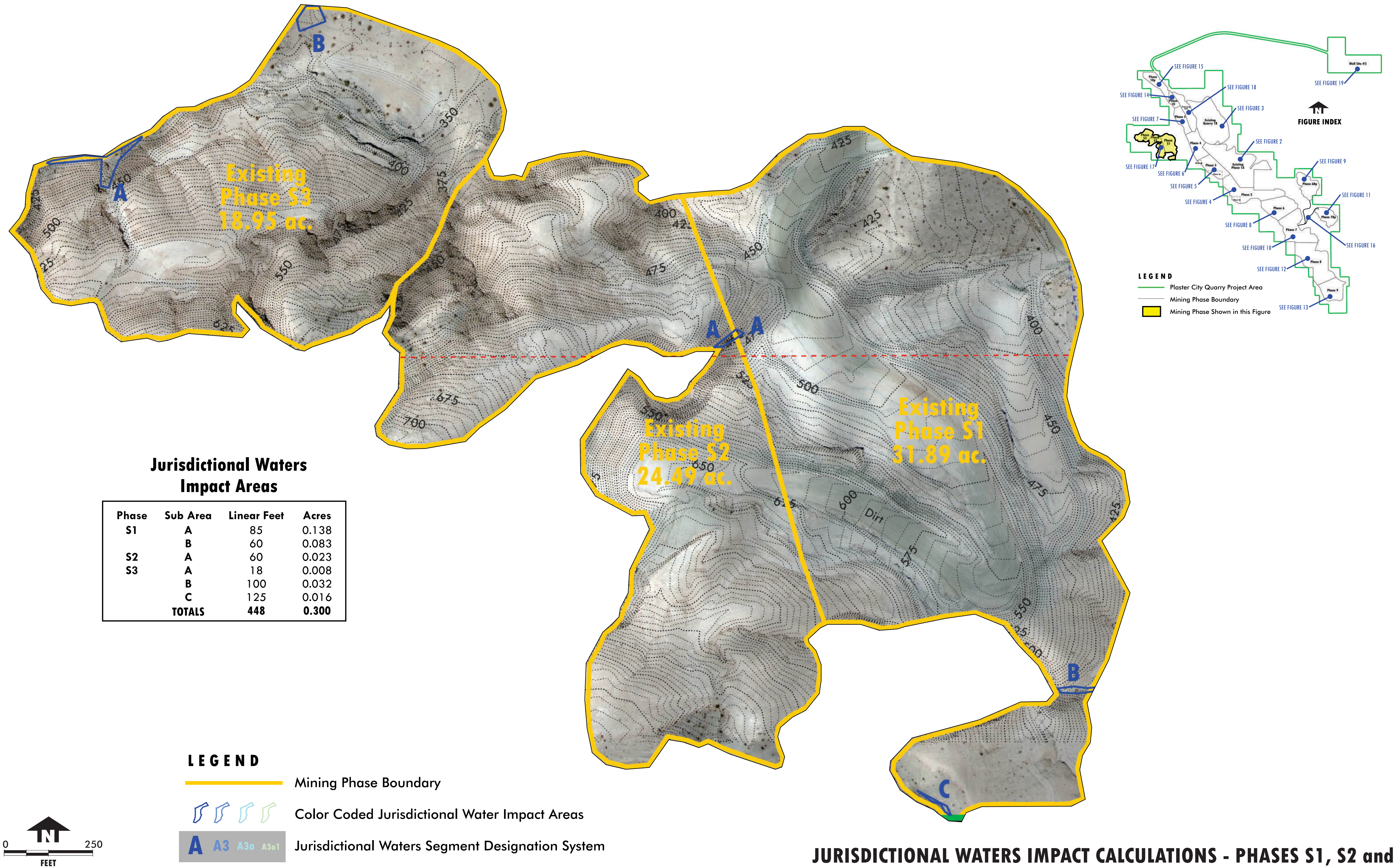
N
0 200
FEET

Prepared By (TAG 11/02/16):
LILBURN
CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - HAUL ROADS NORTH and SOUTH

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 16



Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
S1	A	85	0.138
	B	60	0.083
S2	A	60	0.023
S3	A	18	0.008
	B	100	0.032
	C	125	0.016
	TOTALS	**448**	**0.300**

LEGEND

━	Mining Phase Boundary
⌒ ⌒ ⌒ ⌒	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES S1, S2 and S3

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 17

Prepared By (TAG 11/02/16):
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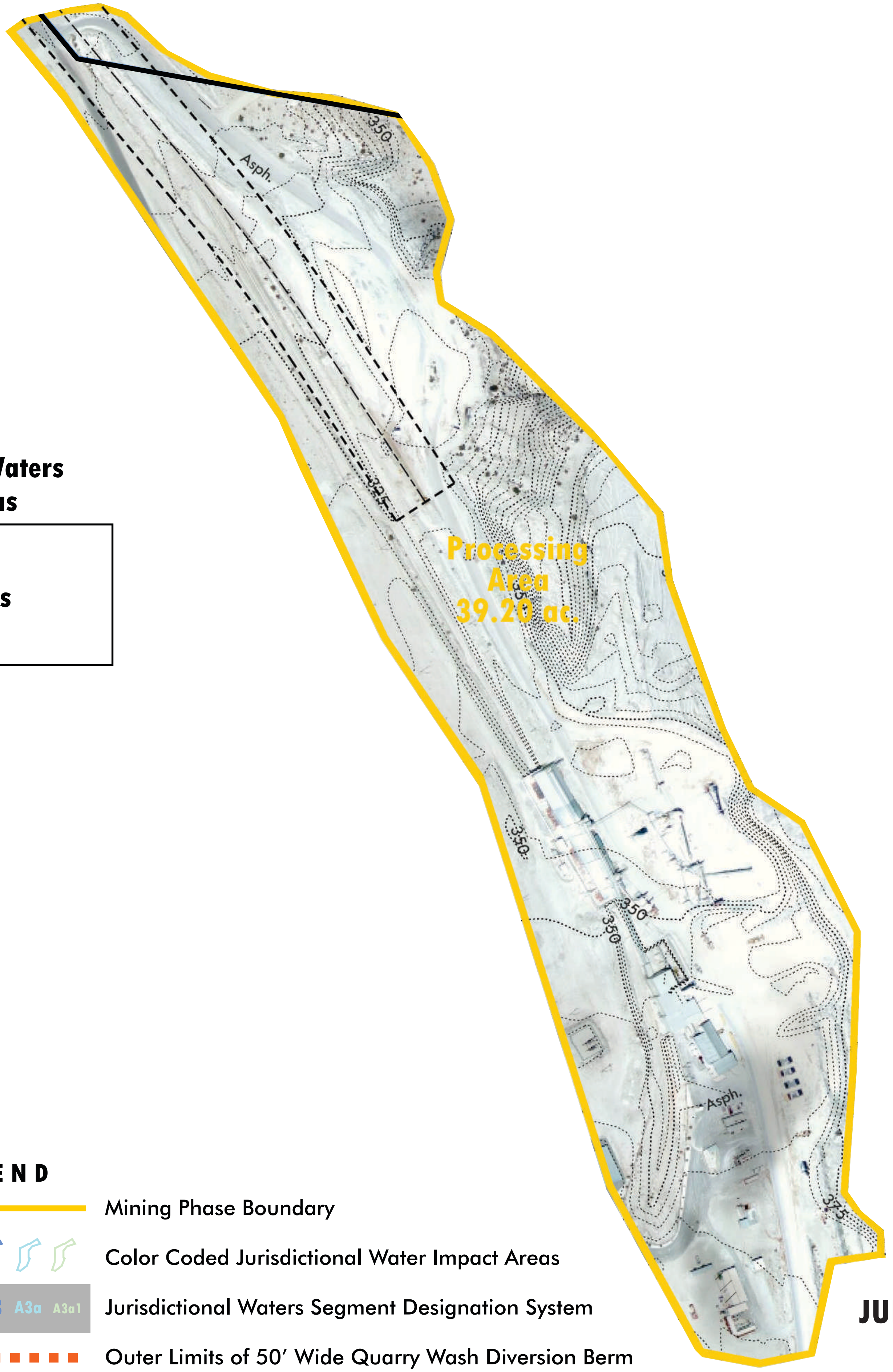
CORPORATION



Jurisdictional Waters Impact Areas

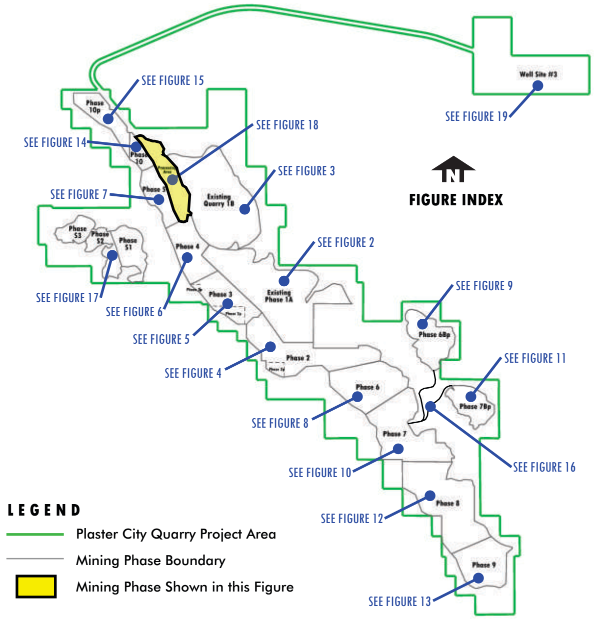
No Impacts

LEGEND

▬	Mining Phase Boundary
⟆ ⟆ ⟆ ⟆	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50' Wide Quarry Wash Diversion Berm

0 300
FEET

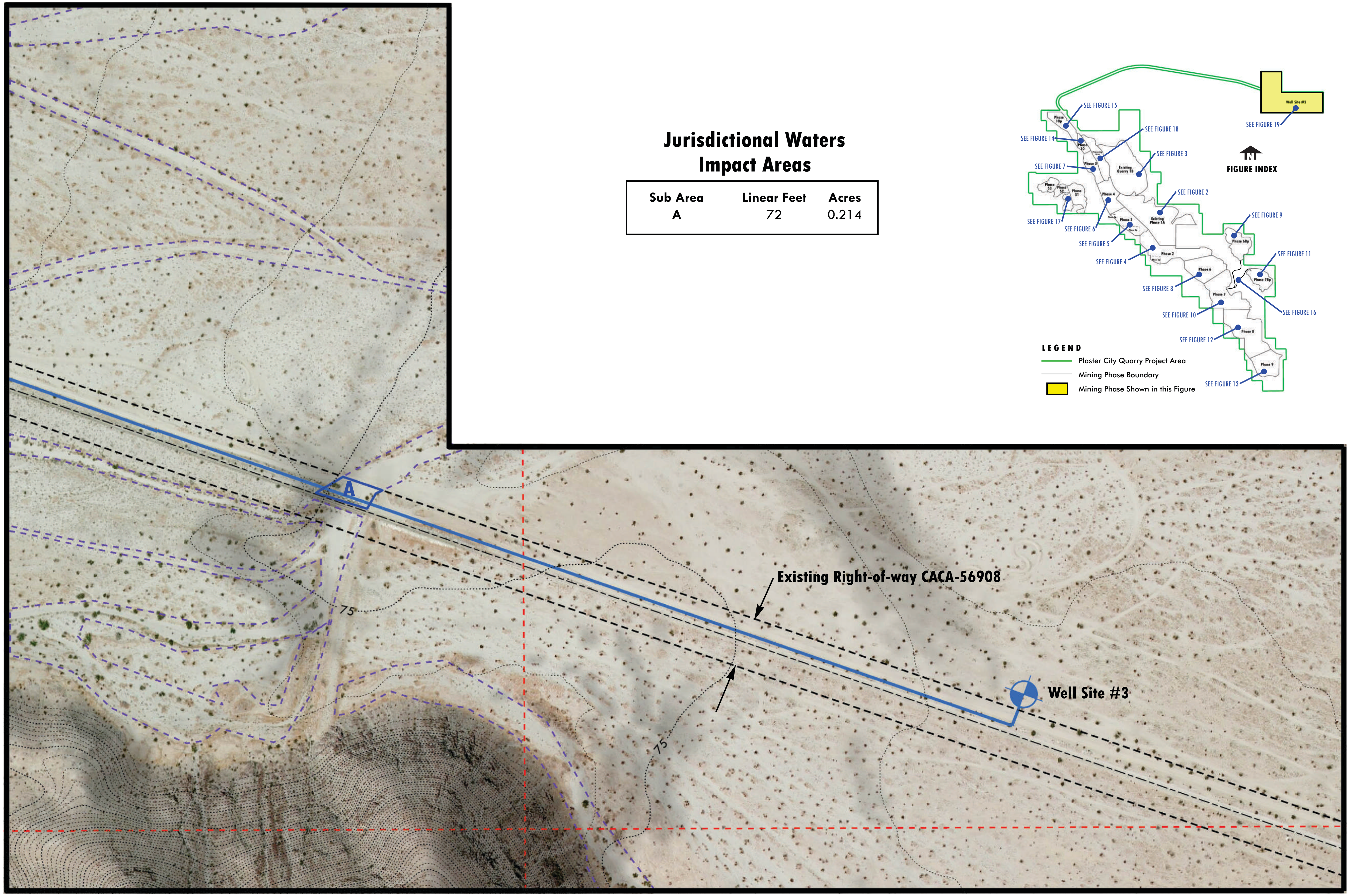
Prepared By (TAG 11/02/16):
LILBURN
CORPORATION



JURISDICTIONAL WATERS IMPACT CALCULATIONS - PROCESSING AREA

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 18



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	72	0.214

LEGEND

- USG Patented Land
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 Jurisdictional Waters Segment Designation System
- Proposed Waterline/Powerline

N
0 300
FEET

Prepared By (TAG 11/02/16):
LILBURN
CORPORATION

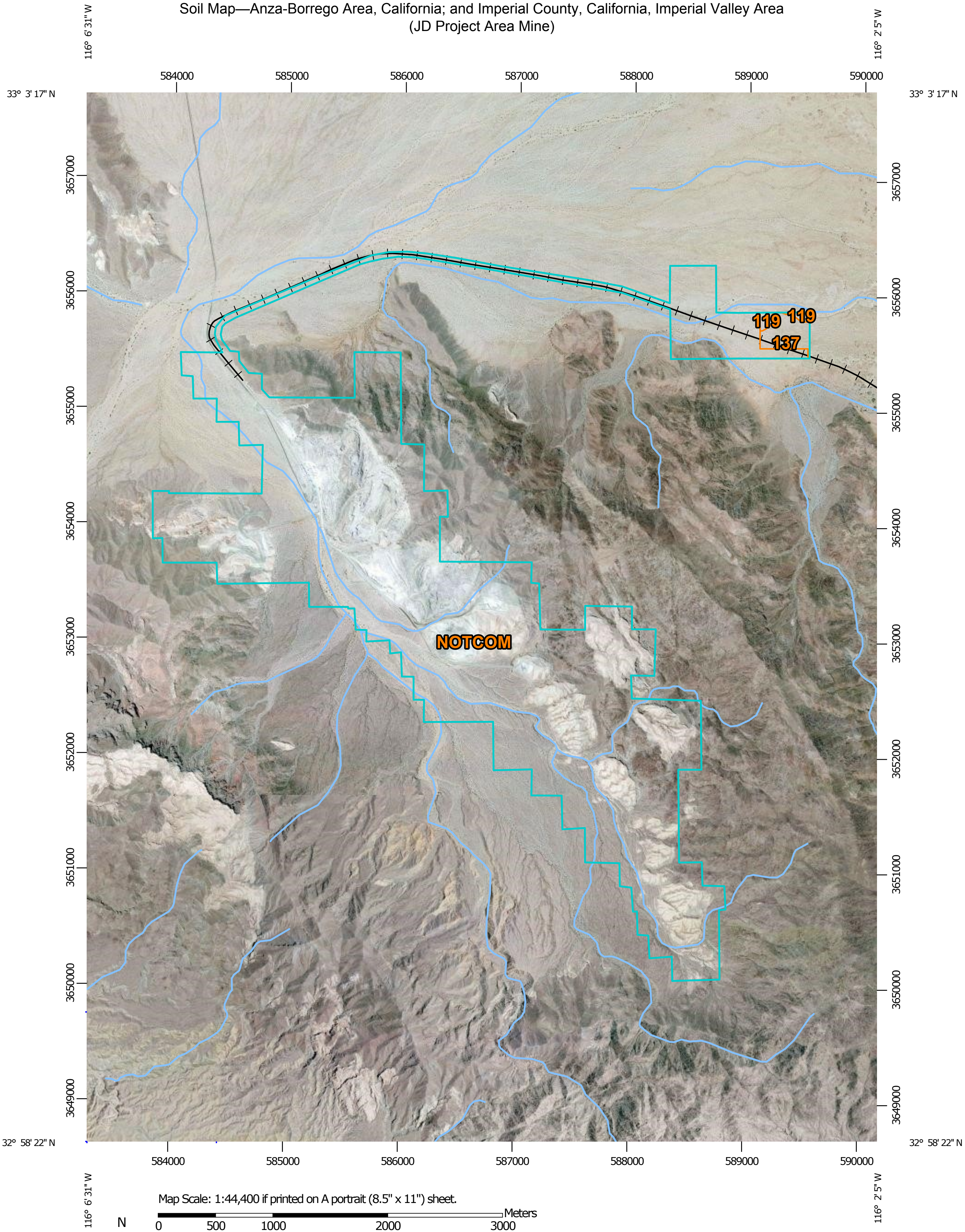
JURISDICTIONAL WATERS IMPACT CALCULATIONS - WELL SITE #3

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 19

APPENDIX B

Soil Map—Anza-Borrego Area, California; and Imperial County, California, Imperial Valley Area
(JD Project Area Mine)



Map Scale: 1:44,400 if printed on A portrait (8.5" x 11") sheet.

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Anza-Borrego Area, California
Survey Area Data: Version 1, Dec 13, 2013

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 2, 2010—Jun 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Anza-Borrego Area, California (CA804)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
NOTCOM	No Digital Data Available	2,271.7	98.5%
Subtotals for Soil Survey Area		**2,271.7**	**98.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**

Imperial County, California, Imperial Valley Area (CA683)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
119	Indio-Vint complex	6.5	0.3%
137	Rositas silt loam, 0 to 2 percent slopes	27.5	1.2%
Subtotals for Soil Survey Area		**34.0**	**1.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**

APPENDIX D-3:
BIOLOGICAL OPINION

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United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer to:
FWS-ERIV-11B0345-19F1352

November 22, 2019
Sent by Email

Memorandum

To: Field Manager, Bureau of Land Management, El Centro Field Office
El Centro, California
Attention: Mark Massar

From: Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

SCOTT SOBIECH Digitally signed by SCOTT SOBIECH
Date: 2019.11.22 10:29:42 -08'00'

Subject: Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the proposed issuance of a right-of-way (ROW) grant by the Bureau of Land Management (BLM) and proposed issuance of an individual permit under section 404 of the Clean Water Act by the U.S. Army Corps of Engineers (Corps) that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine operated by U.S. Gypsum Company (USG, or Applicant) in Imperial County, California. In accordance with the National Environmental Policy Act, the BLM is the lead Federal agency and the Corps is identified as a cooperating agency. This biological opinion analyzes the effects of the gypsum mine expansion on the federally endangered distinct population segment of Nelson bighorn sheep (Peninsular Range DPS; Peninsular bighorn sheep) *[Ovis canadensis nelson]* and its designated critical habitat in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq*.).

Updates to the regulations governing interagency consultation (50 CFR 402) were effective on October 28, 2019 (84 FR 44976). This consultation was pending at that time, and we are applying the updated regulations to the consultation. As the preamble to the final rule adopting the regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." We have reviewed the information and analyses relied upon to complete this biological opinion in light of the updated regulations and conclude the biological opinion is fully consistent with the updated regulations.

This biological opinion is based on information provided in the following documents and communications: (1) Biological Assessment: United States Gypsum Company Expansion/Modernization Project (BLM 2019a); (2) Imperial County, California, United States

Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement (Resource Design Technology, Inc. 2008, hereinafter 2008 Final EIR/EIS); (3) United States Gypsum Company Expansion/Modernization Project Imperial County, California, Draft Supplemental Environmental Impact Statement (BLM 2019b, hereinafter 2019 Draft Supplemental EIS), (4) 2018 Revised Plan of Operation (USG 2018); (5) written, telephone, and electronic mail correspondence received during the consultation time period; and (6) pertinent literature contained in our files. The project file for this consultation is located at the Carlsbad Fish and Wildlife Office.

CONSULTATION HISTORY

In 2008, the BLM initiated section 7 consultation with the Service to determine if the Gypsum Mine Expansion and Modernization Project (Project) as described in the 2008 Final EIR/EIS would adversely affect the Peninsular bighorn sheep or adversely modify its designated critical habitat. The BLM and the Service did not complete the section 7 consultation and the BLM did not issue a Record of Decision. In 2014, USG requested the BLM issue a Record of Decision for the Project. Coordination between the BLM and the Corps in 2015 led to the determination that a 2019 Supplemental EIS must be prepared to analyze new information and changes to the proposed action that have occurred since the release of the 2008 Final EIR/EIS.

Between February 2015 and August 2019, staff from the Palm Springs Fish and Wildlife Office (PSFWO) worked with the BLM, USG, the Corps, and staff from the California Department of Fish and Wildlife (CDFW) to clarify the project description, Project build-out scenarios, effects to Peninsular bighorn sheep and desert pupfish, and avoidance and minimization measures. The BLM and Corps determined there would be no effect to desert pupfish or its designated critical habitat with implementation of the Project. Their determination is based on information provided in the biological assessment indicating that there is no desert pupfish suitable habitat within Project impact areas and there would be no adverse effects on downstream surface water or groundwater in occupied desert pupfish habitat in San Felipe Creek. Efforts to clarify these issues included participating in site visits and meetings, assessing baseline conditions, and providing comments on the Project’s draft biological assessment (BLM 2019a).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the BLM’s issuance of a ROW grant and the Corps issuance of Clean Water Act section 404 individual permit that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine. The ROW grant and individual permit would cover mining and reclamation activities for approximately 80 years, which includes mining and final reclamation (i.e., restoration) activities. The USG mine is located on the lower slopes of the Fish Creek Mountains in western Imperial County, California (Figure 1).

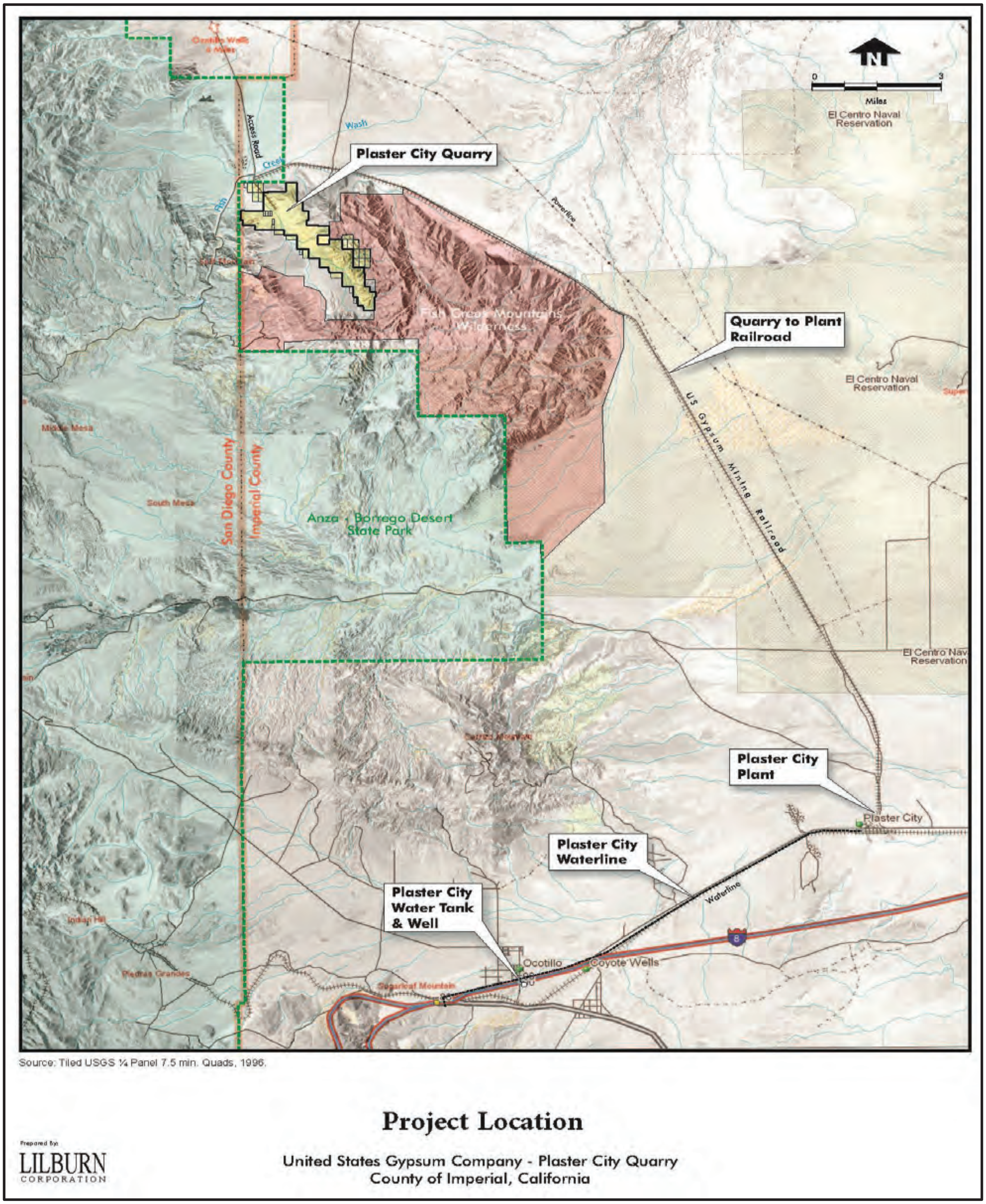

Figure 1: USG Company Expansion/Modernization Project – Project Component Areas

Mining activities have been ongoing since 1922 and USG has owned and continuously operated the quarry since 1945. Since 1922, the amount of gypsum production has varied based on demand, so mining and processing activities are reduced during times of low gypsum demand, e.g., during economic recessions. Currently, mining operations cover approximately 431 acres (Table 1). The Phases and associated acreage impacts are only for the Plaster City Quarry Expansion Project component.

Table 1. USG Company Plaster City Quarry Expansion Existing and Future Phase Acres

Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Existing Phase 1A	Existing mining	163.3	0	0
Existing Phase 1B	Existing mining	150.1	0	0
Existing Phase S1	Existing mining	32	0	0
Existing Phase S2	Existing mining	24.4	0	0
Existing Phase S3	Existing mining	19	0	0
Processing Area	Existing mining	39.1	0	0
Existing Shoveler Haul Road	Existing mining	3	0	0
Total	Existing mining	430.9	0	0
Phase 2	Partially disturbed by existing mining	87.9	66.7	21.2
Phase 3	Partially disturbed by existing mining	36.4	33.5	2.9
Phase 4	Partially disturbed by existing mining	46.5	31.3	15.2
Phase 5	Partially disturbed by existing mining	31	17.3	0
Phase 6	Partially disturbed by existing mining	71.2	70.5	0.7
Total	Partial disturbance	273	219.3	40
Phase 2p	Undisturbed	5.4	5.4	0
Phase 3p	Undisturbed	10.9	10.9	0
Phase 6Bp	Undisturbed	47.2	47.2	0
Phase 6 Haul Road	Undisturbed	3.6	3.6	0

Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Phase 7	Undisturbed	91.5	91.5	0
Phase 7Bp	Undisturbed	32.4	32.4	0
Phase 7 Haul Road	Undisturbed	1.7	1.7	0
Phase 8	Undisturbed	116.4	116.4	0
Phase 8p	Undisturbed	6.8	6.8	0
Phase 9	Undisturbed	54.3	54.3	0
Phase 10	Undisturbed	13.3	0	0
Phase 10p	Undisturbed	34.5	0	0
Mill Site Claims	Undisturbed	18.7	18.7	0
Total	Undisturbed	436.7	388.9	0
Grand Totals		**1,140.6**	**608.2**	**40**

In addition to the Plaster City Quarry, USG operates a manufacturing plant (USG Plaster City Plant) for wallboard and other gypsum products at Plaster City in southwestern Imperial County, located about 26 miles southeast of the quarry (see Figure 1). The proposed replacement pipeline and canal pipeline as described below would serve the Plaster City Plant. USG also operates a narrow-gauge railroad line to deliver gypsum ore from the Plaster City Quarry to the Plaster City Plant. USG does not propose upgrades or improvements to the narrow-gauge railroad line.

The proposed Project consists of five main components: (1) expansion of the Plaster City Quarry (includes all the partially built and unbuilt Phases shown in Table 1); (2) construction of a new water well, Quarry Well No. 3, and pipeline to supply the Plaster City Quarry (see Figure 2); (3) reclamation activities at the Plaster City Quarry (includes all Phases); (replacement of an existing water pipeline from existing wells and storage tank to supply USG’s Plaster City Plant (associated with the Plaster City Plant); and (5) construction of a second new water pipeline (canal pipeline) from the Imperial Irrigation District’s (IID) Westside Main Canal to the Plaster City Plant to supplement the water supply (associated with the Plaster City Plant). The Project also contains a series of measures to avoid and minimize the effects of the proposed action on biological resources. The Project components are shown on Figure 1 in the biological assessment (BLM 2019a).

The following sections provide a summary of each of the Project components. A full description of each component can be found in the biological assessment (BLM 2019a).

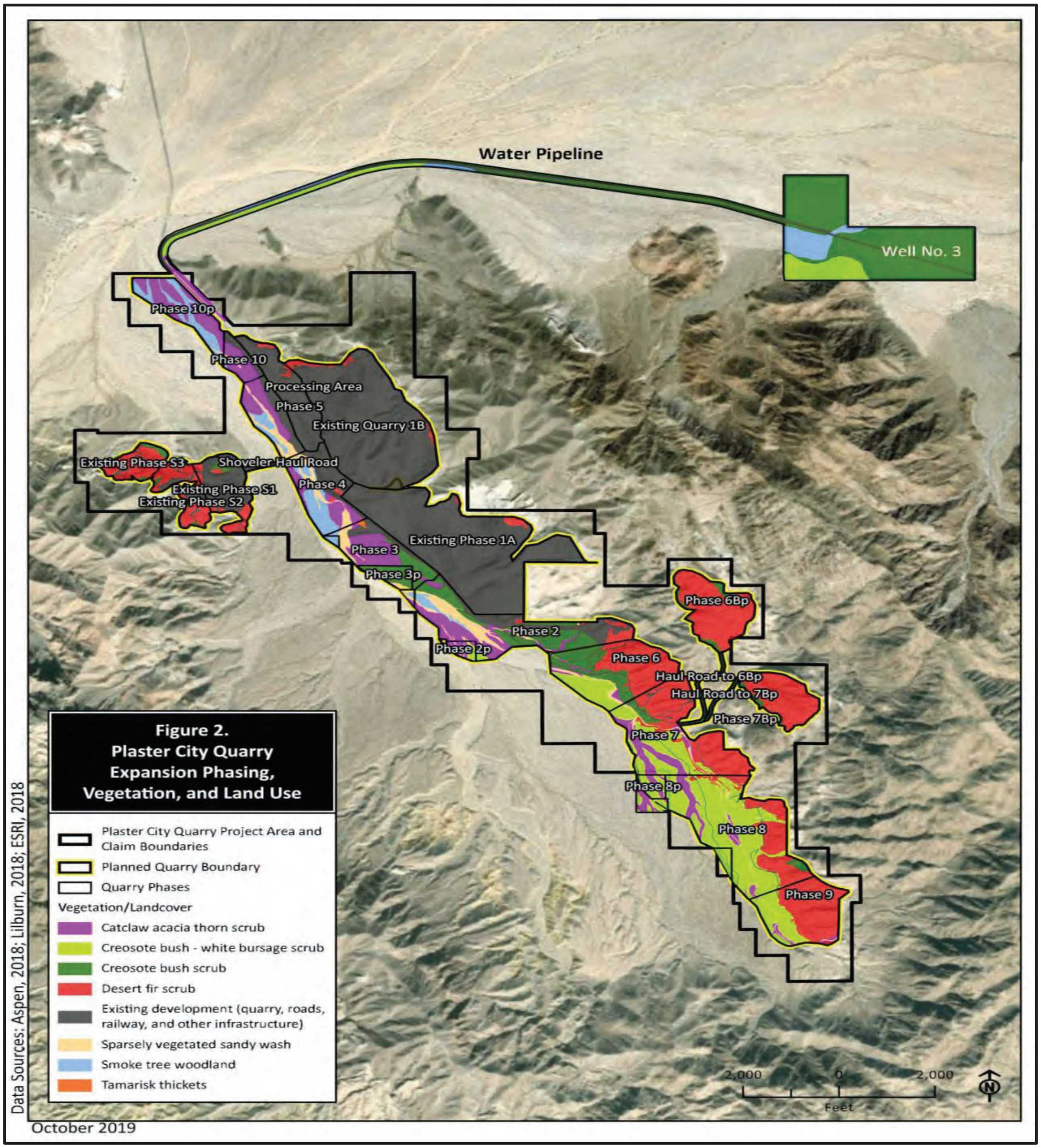

Figure 2: Plaster City Quarry, Expansion Area and Phases

Plaster City Quarry Expansion

The Project consists of a multi-phased quarry plan that would systematically quarry and process approximately 1.92 million tons of gypsum annually over a period of approximately 73 years, plus 7 years to complete reclamation activities (see Figure 2). Mining and reclamation are divided into phases based upon quantity and quality of gypsum and projected market demand. The multi-phased plan includes opening new hillside quarries to remove outcrops of high-grade gypsum. The existing hillside quarry activity along the west-facing slope of the Fish Creek Mountains would be expanded to the south to access the subsurface gypsum deposits. Overburden (sand, gravel, and boulders) would be stripped to a depth of approximately 100 feet and used in reclamation. Quarrying and reclamation operations would take place simultaneously in phases throughout the life of the mine.

The existing disturbance consists of Phases 1A, 1B, the Shoveler Annex (Phases S1, S2, and S3), and processing facilities and access roads. The Project would authorize additional mining disturbance within Phases 2 through 9. All planned new disturbance, as well as quarry areas post-dating the California Surface Mining and Reclamation Act of 1975 (SMARA), are subject to SMARA's reclamation requirements.

Plaster City Quarry expansion activities include site grading, quarrying, pre-milling (primary and secondary crushing and screening), and shipping material via the existing narrow-gauge railroad to the Plaster City Plant for processing. Initial Plaster City Quarry construction (grading) entails a heavy equipment pass over a previously unmined (undisturbed) surface, to remove vegetation and a top layer of alluvium or clay. It includes driving heavy equipment over the undisturbed area, pushing the vegetation and the top few inches of overburden into spoils stockpile areas. Typically, an operator can clear about five acres per day. Quarrying activities also include blasting, which occurs two to four times per month. Each blast results in the fragmentation of an average of 55,000 tons of gypsum. During the period 2015 through 2018, blasting, on average, occurred twice monthly. No modification or expansion of the existing pre-milling facility is proposed. Haul road alignments within the Plaster City Quarry would be changed to accommodate individual quarry phases and the railroad and access roads would continue to be maintained.

As indicated above, the USG mine expansion would take place over the course of about 80 years. USG is currently mining Phases 1A and 1B, and S1 and S2. Expansion into Phases 2, 2P, 3, 3P, as the initial mining activities, would last approximately 29 years. From there, the quarry would expand north and south into adjacent phases as gypsum is extracted and reclamation continues. Timing would be dependent on quantity and quality of recoverable gypsum, blending formulas, plant demand, overburden placement, and reclamation phasing. The logical progression of mining would be into Phase 4 to the north and Phase 6 to the south, then Phase 5 and Phase 7. Total mine life is approximately 73 years at maximum production (Table 2). The logical final phases would be Phases 9 to the south, Phase 10 to the north, and outcrop Phases 6BP and 7BP to the east, but these may vary as outcrop and alluvial deposits are depleted and blending scenarios dictate. Phases may be mined concurrently depending on gypsum quality (lilburn 2019, pers. comm.).

The train on the narrow-gauge railroad consists of up to 25 bottom dump hopper cars (45-ton capacity) and the train currently makes an average of 950 round trips between the Plaster City Quarry and the Plaster City Plant each year. With the proposed new production, the number of train trips could reach 1,800 round trips annually.

Construction of Plaster City Quarry Water Well and Pipeline

USG proposes to construct and operate a new production water well, Well No. 3 (Figure 2). The original water well was constructed in 1983 and is permitted under Imperial County Conditional Use Permit (CUP) No. 635-83 for a maximum withdrawal of 2,862 acre-feet per year. USG is proposing a replacement well be drilled on USG-owned land. This action was analyzed in the 2008 Final EIR/EIS and approved by Imperial County. A new underground pipeline would deliver water from Well No. 3 to the Plaster City Quarry, and a new electrical service line would provide electrical power to the pump. The power line and water pipeline would be located between the existing railroad alignment and the existing access road. The power line would be located underground from the well head to the Plaster City Quarry gate; within the quarry property it would be installed on either existing overhead power poles or on replacements of the existing poles, if needed. The total length of utility improvements from the well site to the Plaster City Quarry site would be approximately 18,240 linear feet.

Table 2: Projected Life (in Years) of Quarry Phases

Phase	Estimated Life (Years)	Phase	Estimated Life (Years)
1B	0	7BP	1.36
1A	9.72	6	7.39
2	7.68	S3	2.11
2P	0.1	7	8.22
3	4.47	8	11.25
3P North	0	8P	0.19
3P South	0.67	10	0.48
S1	3.9	9	4.44
S2	2.15	5	2.34
10P	1.64	4	1.71
6BP	2.7	**Total**	**72.52**

Plaster City Quarry Reclamation

Following the removal of gypsum, the areas disturbed by mining activities would be reclaimed as open space. Reclamation would be conducted concurrently, where feasible, during operations. Details of facilities decommissioning can be found in the 2019 Draft Supplemental EIS, Chapter 2 (Proposed Action and Alternatives). On completion of quarrying, the steepest portion of the hillside quarries would consist of maximum 1:1 slopes along a back-wall with a broad area excavated to approximately 100 feet deep at the base of the excavations and in the adjacent sparsely vegetated sandy wash (see Figure 2). The benched hillsides would be re-contoured by blasting or bulldozing the benches to soften the topography. Reclamation of the Plaster City Quarry phases would include the following activities:

- Backfilling and grading of phased quarries
- Stabilization of slopes
- Rehabilitation of pre-mining drainages
- Removal, disposal, or utilization of residual equipment, structures, and refuse
- Control and disposal of contaminants
- Treatment of streambeds to control erosion and sedimentation
- Revegetation of phased quarries

Reclamation efforts would follow a series of steps that would likely vary over the life of the mine operation. As new information or techniques become available that could improve the results of the revegetation activities, they would be integrated into revegetation practices. Thus far, revegetation efforts have taken a passive approach by re-contouring portions of quarried areas, allowing them to remain undisturbed, and monitoring the re-establishment of native vegetation. After approximately 5 years, natural vegetation has become established on the re-contoured slopes. USG has successfully re-vegetated 20 acres within Phase 1A using this approach (USG 2018).

Replacement of Existing Plaster City Plant Water Pipeline

The Project would replace the existing water line serving the Plaster City Plant with a new 10-inch line parallel to and within approximately twenty feet of the existing alignment. Water is supplied to the Plaster City Plant by private groundwater wells located approximately 8 miles west of the plant in the community of Ocotillo (Figure 1). The amount of groundwater pumped varies annually to meet plant processing demands; USG currently has the right to pump up to a maximum of 767 acre-feet per year. The groundwater is transmitted to the plant via an 8-inch gravity fed water pipeline, located along Imperial County Route S80 and within the existing road right-of-way.

Construction of New Canal Water Pipeline

The Project may include a new pipeline to deliver IID water from the Westside Main Canal to supplement the Plaster City Plant's water supply if this alternative is selected. The alignment is approximately 5.5 miles long and is proposed to be constructed within the right-of-way of the Union Pacific Rail Line and a minimum of 85 feet from the centerline of the tracks.

Conservation Measures (CM)

The Proposed Action includes a number of avoidance and minimization measures (conservation measures) to reduce adverse effects to natural resources. These include general biological resources conservation measures as well as measures specifically applicable to avoid and reduce adverse effects to Peninsular bighorn sheep.

CM 1. **Minimize Temporary Use Areas**. During construction of the Plaster City Quarry water pipeline, the need for temporary use areas will be minimized by using the USG private parcels on either end of the pipeline alignment for staging and equipment and material storage. Materials will be transported to the Project areas as needed, for immediate use.

CM 2. **Mining and Reclamation**. Mining and reclamation will be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation activities will be conducted concurrently with mining and will be initiated within each phase as soon as is feasible. Reclamation will include slope contouring and revegetation with native plant species as specified in the reclamation plan.

CM 3. **Domestic Animals**. The Project proponent will not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees will include instructions to report observations of domestic animals to the Quarry Manager. Upon receiving any such reports, the Quarry Manager will contact the appropriate authorities for removal of domestic animals.

CM 4. **Revegetation (Reclamation)**. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG will implement the revegetation plan. In general, revegetation will be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation will be concurrent with closure of individual phases. Wherever ongoing Plaster City Quarry operations may eliminate access to closed upper benches, those benches will be revegetated while access is still available. Due to the continually changing bench configuration and access within the working quarry, revegetation scheduling for each quarry bench will be based on the geotechnical safety of slopes and resources remaining of the gypsum deposit. Wherever possible, USG will begin revegetation of phases to restore native habitat values concurrently or in advance of opening new phases.

CM 5. **Integrated Weed Management Plan**. USG will prepare and implement an integrated weed management plan to control invasive weeds, including tamarisk and fountain grass, in cooperation with the BLM and Imperial County. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the Project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and Imperial County for review and approval prior to the start of construction and will be implemented for the life of the Project.

CM 6. **Mining and Construction Activity Monitoring and Reporting**. Prior to the beginning of any Plaster City Quarry expansion activities, USG will identify a

Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and Service. The Designated Biologist will be in direct contact with BLM and the Service. The Designated Biologist and Biological Monitors will have the authority and responsibility to halt any Project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

a. The Designated Biologist will notify BLM's Authorized Officer and the Service at least 14 calendar days before the initiation of Plaster City Quarry expansion of new ground-disturbing activities.

b. The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see CM 8 below) and will be on site during any Plaster City Quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils or stockpile areas) and will be responsible for ensuring that no expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see CM 11 below).

c. The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and the Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.

d. The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the Project to administer the Worker Education Awareness Program (CM 7) and ensure compliance with the conservation measures. The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the Project documenting the implementation of the following programs and plans, as well as compliance or non-compliance with each conservation measure:

    - Integrated Weed Management Plan
    - Worker Education Awareness Program
    - Reclamation Plan
    - Wildlife Mortality Reporting Program
    - Peninsular Bighorn Sheep Monitoring Plan

CM 7. **Worker Education Awareness Program**. Prior to Project approval, USG will develop a Worker Education Awareness Program (WEAP), to be implemented upon final approval by BLM and the Service. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the Project site throughout the life of the Project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all personnel. The WEAP will be approved by the BLM, Service, and CDFW, and will include the following:

a. Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female sheep.

b. The biology and status of special-status species of the area, including Peninsular bighorn sheep.

c. A summary of the avoidance and minimization measures and other conservation measures.

d. An explanation of the Peninsular bighorn sheep observation log (see CM 10), including instruction on correctly filling out data.

e. An explanation of the flagging or other marking that designates authorized work areas.

f. Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep, is encountered.

CM 8. **Wildlife Impact Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project.

a. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity. Speed limits along all access roads will not exceed 15 miles per hour.

b. Night lighting will be avoided or minimized by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.

c. The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.

d. Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).

e. No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight to prevent injury to Peninsular bighorn sheep. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Pitfalls will be covered completely to prevent access by small mammals or reptiles.

f. No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site Project facilities and activities, or in support of any other Project activities.

g. All trash and food-related waste will be placed in self-closing coyote-proof containers and removed regularly from the site to prevent overflow. Workers will not feed wildlife.

h. Water applied to dirt roads and construction areas for dust abatement will use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife such as coyotes and other sheep predators. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.

i. Any injured or dead wildlife encountered during Project-related activities will be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, including Peninsular bighorn sheep, the Designated Biologist or Biological Monitor will notify the BLM, Service, and/or CDFW, as appropriate, within 24 hours of the discovery.

CM 9. **Minimize Impact to Designated Critical Habitat**. To minimize impacts to Peninsular bighorn sheep designated critical habitat, USG will conduct 1:1 onsite reclamation as specified in the Mining and Reclamation Plan for all Project disturbance areas. Additionally, USG will acquire critical habitat for long-term wildlife habitat conservation to minimize the loss of 14.6 acres of designated critical habitat on public lands within the Plaster City Quarry. USG would provide 29.2 acres of compensation habitat. This compensation land is currently under private USG ownership and would be permanently protected as Peninsular bighorn sheep habitat through a conservation easement or similar instrument, to be developed in coordination with BLM. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM, CDFW, and the Service.

CM 10. **Peninsular Bighorn Sheep Monitoring and Reporting**. USG will record and report all onsite Peninsular bighorn sheep observations to BLM, CDFW, and the Service and will support the CDFW Peninsular bighorn sheep monitoring and reporting program within the Fish Creek Mountains and Vallecito Mountains. USG will continue implementing a reporting form (observation log) for all Peninsular bighorn sheep observations, including completing data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation to the Quarry Manager. In addition, USG will fund the purchase of radio collars and the capture of 10 Peninsular bighorn sheep in the Fish Creek Mountains and Vallecito Mountains ewe group areas, to provide location monitoring data within these ewe groups over a 10-year period. The funding amount will be $157,115 (per cost estimate provided by CDFW), to be transferred to the CDFW program via a means agreed upon by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek Mountains and Vallecito Mountains ewe groups, and all resulting data will be available to BLM to support the long-term analysis of Peninsular bighorn sheep activities in the Federal action area.

CM 11. **Peninsular Bighorn Sheep Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project:

a. New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through June 30) as defined in the Peninsular bighorn sheep recovery plan, except with prior approval by the Service and CDFW.

b. Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.

c. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities, and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if Peninsular bighorn sheep are within a 0.25-mile radius of the activity.

d. If a Peninsular bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Plaster City Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify the BLM, CDFW, and the Service.

- e. Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 8 feet tall. Any proposed permanent fencing design will be submitted for BLM, CDFW, and the Service review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.

- f. When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).

- g. Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

- h. In consultation with BLM, CDFW, and the Service, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought.

CM 12. **Future Plaster City Quarry Phasing Notification and Review.** USG will notify the BLM, CDFW, and the Service 90 days prior to initiating future mining activities in the four phases nearest to the highest Peninsular bighorn sheep occurrence and habitat connectivity areas (i.e., Phases 6BP, 7BP, 8, and 9). Upon notification, the agencies will coordinate with USG to review Peninsular bighorn sheep occurrence and activity in the vicinity obtained during the intervening years. Peninsular bighorn sheep avoidance and minimization measures may be revised as needed to conform to new information.

Action Area

The implementing regulations to section 7(a)(2) of the Act describe the action area as all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR §402.02). Analyses of the environmental baseline, effects of the action on the species and designated critical habitat, cumulative effects, and the impacts of the incidental taking, are based upon the action area as determined by the Service (Service and NMFS 1998).

The action area for the Project includes all suitable Peninsular bighorn sheep habitat within the Vallecito Mountains/Fish Creek Mountains recovery region (recovery region 8; 173,978 acres), which includes the quarry expansion area and the new water well and pipeline alignment (Figure 3). We have identified the recovery region as the action area because ewe groups within recovery regions are connected via ram movements and rarer dispersal by ewes; therefore, the Peninsular bighorn sheep population is comprised of a metapopulation structure (Service 2000). Effects to one ewe group in a recovery region will have consequences to other ewe groups within that same recovery region.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

As such, in accordance with policy and regulation, the jeopardy determination is made by evaluating the aforementioned components to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild by reducing the reproduction, numbers, and distribution.

Adverse Modification Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat of listed species. “Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species” (50 CFR 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the rangewide condition of designated critical habitat for the Peninsular bighorn sheep in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluates the effects of future non-Federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the designated critical habitat of the Peninsular bighorn sheep are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat for the conservation of the species.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The following discussion briefly summarizes information about Peninsular bighorn sheep relative to its legal status and biology, as discussed in the Service's (1) 5-year review for the species (Service 2011a); (2) recovery plan (Service 2000); and (3) revised designated critical habitat (Service 2009a). Please refer to these documents for more detailed information.

The Service listed the Peninsular bighorn sheep as a distinct population segment (DPS) of the species *Ovis canadensis* on March 18, 1998 (63 FR 13134). The Service revised this listing on April 14, 2009, to identify the listed unit as an endangered DPS of the subspecies (*Ovis canadensis nelsoni*) (74 FR 17288).

Reproduction

Peninsular bighorn sheep reproduction begins during the rut when adult bighorn sheep, who tend to loosely segregate during much of the year, intermingle from August through October (Rubin *et al.* 2000). Gestation time is approximately 174 days (Shackleton *et al*. 1984) and lambs are born between January and August; however, most lambs are born between February and April. Failure to acquire sufficient nutrients during the last 2 months of gestation (typically December and January) and during nursing can adversely affect the survival of newborns (Thorne *et al.* 1976, Holl *et al.* 1979), and the time period surrounding lambing and nursing is very demanding in terms of the energy and protein required by ewes. Therefore, access to food resources with sufficient nutrients can influence reproductive success (Etchberger and Krausman 1999).

In the Peninsular Ranges, ewes estimated to be between 2 and 16 years of age have been documented to produce lambs (Rubin *et at.* 2000; Ostermann *et al*. 2001). As parturition (the act of giving birth) approaches, ewes seek isolated sites with shelter and unobstructed views (Turner and Hansen 1980), and seclude themselves from other females while finding sites to give birth (lambing sites). When ewes are ready to give birth, they will typically seek out the steepest terrain, where they and their lambs will be safest (Geist 1971). Lamb and yearling age classes experience higher mortality rates relative to adult bighorn sheep. After reaching adulthood at 2 years of age, Peninsular bighorn sheep survival rate is high, generally above 70 percent (Service 2000).

Numbers

In 1974, the Peninsular bighorn sheep population was estimated at 1,171 (Weaver 1975), but by 1996 the rangewide population estimate had declined to 276 adult sheep (Service 2000); since that time the population has steadily increased. Currently, the population is considered stable with an estimated 884 adult bighorn sheep in the Peninsular Ranges (Colby and Botta 2017). In 2016, the rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions. Criteria for downlisting Peninsular bighorn sheep from endangered to threatened include, among other things, the occurrence of at least 25 ewes in each recovery region. No rangewide population surveys have been conducted since 2016 so current rangewide population numbers are not available.

Distribution

Within the United States, the range of Peninsular bighorn sheep extends along the Peninsular Ranges from the San Jacinto Mountains in Riverside County, California, south to the U.S.-Mexico border in Imperial County, California. Peninsular bighorn sheep habitat in the Peninsular Ranges is restricted to the east facing, lower elevation slopes that are typically below 4,600 feet and located along the northwestern edge of the Colorado Division of the Sonoran Desert, commonly referred to as the Colorado Desert. Peninsular bighorn sheep regularly use steep, open slopes and ridgelines that offer unobstructed views of wide areas within these mountain ranges. These types of terrain are a crucial component of Peninsular bighorn sheep habitat as it is used for escape from predators (escape terrain), lambing areas, and shelter in both excessive heat and severe storms (Service 2000, Bleich *et al*. 2009).

Designated Critical Habitat

The Service designated approximately 844,897 acres of critical habitat on February 1, 2001 (66 FR 8650) based largely on information from the Peninsular bighorn sheep recovery plan (Service 2000). Following a challenge in court and a review of the best scientific information available at the time, the Service re-designated approximately 376,938 acres of revised designated critical habitat on April 14, 2009 (74 FR 17288).

The Peninsular bighorn sheep revised designated critical habitat rule identifies physical and biological features that are essential to the conservation of the species. As identified in the final revised critical habitat rule (74 FR 17288), the physical and biological features are:

1. Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less below 4,600 feet elevation in the Peninsular Ranges that provide space for breeding, feeding, and sheltering and movement within and between ewe groups.
2. Valley floors, foothills, and alluvial fans and washes with productive soils that support a variety of forage plants to meet the annual and drought-related variations in forage quality and availability.
3. Steep, rugged slopes (60 percent slope or greater) below 4,600 feet elevation that provide secluded space for lambing as well as terrain for predator evasion.
4. Alluvial fans and washes that maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas, such as foraging areas.
5. Intermittent and permanent water sources within the Peninsular Ranges.

Since 2009, there have been temporary disturbances to approximately 12,000 acres of designated critical habitat consisting of transmission line construction and wildland fires (Service 2009b, Service 2019). This is approximately 3 percent of the area under designated critical habitat. We do not have information to indicate that these disturbances are adversely affecting the physical and biological features that are essential to the conservation of the species. Also, a majority of the lands under the critical habitat designation are included in Federal or State lands with conservation mandates such as the Santa Rosa and San Jacinto Mountains National Monument and Anza Borrego Desert State Park. In addition, the Peninsular bighorn sheep is a species covered by the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), which includes designated critical habitat within its Santa Rosa and San Jacinto Mountains Conservation Area. Lastly, based on land use information contained in California's Farmland Mapping and Monitoring Program (FMMP 2016), there has been no significant changes in land use from open space to urban uses between 2010 and 2016 in areas of designated critical habitat.

Recovery

There are nine recovery regions identified within the Peninsular Ranges, including: (1) San Jacinto Mountains, (2) Northern Santa Rosa Mountains, (3) Central Santa Rosa Mountains, (4) Southern Santa Rosa Mountains, (5) Coyote Canyon, (6) Northern San Ysidro Mountains, (7) Southern San Ysidro Mountains, (8) Vallecito Mountains/Fish Creek Mountains, and (9) Carrizo Canyon (Service 2000). The recovery strategy for Peninsular bighorn sheep, as outlined in the recovery plan (Service 2000), included three delisting criteria:

1. At least 25 ewes must be present in each of the nine regions described in the recovery plan, during each of 12 consecutive years, without continued population augmentation.

2. The rangewide population must average 750 individuals (adults and yearlings) with a stable or increasing population trend over 12 consecutive years.

3. Regulatory mechanisms and land management commitments have been established that provide for long-term protection of Peninsular bighorn sheep and all suitable habitat. In addition, connectivity among all portions of habitat must be established and assured through land management commitments such that bighorn sheep are able to move freely throughout the Peninsular Ranges

Challenges to the recovery of Peninsular bighorn sheep within these regions were identified as habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Since the time of listing, threats from habitat loss in the Northern Peninsular Ranges (Recovery Regions 1, 2, 3, and 4) have declined due to the CVMSHCP, a large regional conservation plan that facilitates the purchase and conservation of suitable habitat within these recovery regions (Service 2011a).

Although not identified as threats at listing, invasive nonnative plants, fire suppression, and catastrophic fire impact Peninsular bighorn sheep habitat rangewide (Service 2011a). Impacts of both fire suppression at the higher elevations and more frequent wildfires at lower elevations (due to nonnative plant cover) have increased the magnitude of this threat throughout the range since listing (Service 2011a). It is unknown whether fire caused any mortality of Peninsular bighorn sheep, but large wildfires may threaten individuals in the future. However, Peninsular bighorn sheep have been documented foraging in burned areas at high elevation, suggesting a potential, if transient, benefit (Service 2011a). Lastly, changes in climate, including higher temperatures, drought, and longer time intervals between heavy rainfall events, affect the amount of water available to Peninsular bighorn sheep rangewide, and pose challenges to recovery (Service 2011a).

Since listing, Peninsular bighorn sheep population growth has increased significantly in all recovery regions, with the exception of the San Jacinto Mountains. As stated above, the 2016 rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions, which meets one of the criteria for downlisting the species. While the number of adults in most all of the recovery regions continues to improve, low lamb recruitment continues to be documented in several recovery regions (Colby and Botta 2018).

ENVIRONMENTAL BASELINE

Revised regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action (Project). The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

The action area occurs at the west margin of the Salton Basin in Imperial and San Diego Counties within the Peninsular Ranges. Summer temperatures are hot, generally above 100 degrees Fahrenheit. Total annual precipitation averages about 5 inches per year, with most precipitation falling in the winter months, but some precipitation also occurs in the summer months during irregular summer thunderstorms. USG's existing quarry and quarry expansion area is located in a broad alluvial fan canyon at the base of the Fish Creek Mountains to the east and Split Mountain (part of the larger Vallecito Mountain chain) to the west. The Project is bounded by the Anza Borrego Desert State Park on the west and northwest, and the Fish Creek Mountains Wilderness Area on the east and south within public lands administered by the BLM (Figure 1). Existing approvals authorize mining activities on 464 acres (all on private lands), of which approximately 431 of these authorized acres have been disturbed by previous and ongoing mining activities and approximately 20 of these acres have been restored. Under the proposed action, new mining would occur on a total of approximately 709.7 acres, 608.2 of which are Peninsular bighorn sheep designated critical habitat (Table 1).

Past Consultations within the Action Area

The Service issued a programmatic biological opinion evaluating the effects of the California Desert Conservation Area Plan, as amended, on Peninsular Bighorn Sheep, Riverside and Imperial Counties, California (Service 2010). The Service found the BLM's plan guidance was not likely to jeopardize the continued existence of Peninsular bighorn sheep or adversely modify designated critical habitat. Our 2010 programmatic biological opinion concluded that effects to Peninsular bighorn sheep related to the USG mine expansion was the subject of an ongoing section 7 consultation and effects of the mine expansion were not analyzed in that biological opinion.

Status of the Species in the Action Area

The action area encompasses the Peninsular bighorn sheep Vallecito Mountains/Fish Creek Mountains recovery region, which contains about 173,978 acres of Peninsular bighorn sheep habitat. This recovery region supports the Lizard Wash, Sunset, Vallecito Mountains, and Fish Creek Mountains ewe groups (Colby and Botta 2017), as shown below in Figure 3. Over a 5-year period from 2012-2016, the Peninsular bighorn sheep ewe survival rate in this recovery region was very high, above 90 percent (Colby and Botta 2017). During the 2017-2018 reporting period, there were six documented radio-collared sheep mortalities (five ewes, one ram) in the recovery region, all of which were likely due to mountain lion predation (Colby and Botta 2018). Lamb survival and recruitment are not documented in this recovery region (Colby and Botta 2017).

The estimated population abundance of Peninsular bighorn sheep in this recovery region increased during the period from 1998 to 2016. The region had an estimated population of 45 animals in 1998 and an estimated population of 163 animals (ewes, rams, and yearlings) in 2016 (Colby and Botta 2017). Current population estimates for the recovery region are not available, but we have no information to indicate any reasons for a significant drop in population numbers. To date, past mining activities do not appear to have had an adverse effect on numbers of Peninsular bighorn sheep in the recovery region.

The CDFW radio-collar location data in the action area indicate there are two ewe groups, Vallecito Mountains and Fish Creek Mountains that use the mountain slopes and foothills surrounding the Plaster City Quarry and will occasionally use alluvial fans in the canyon areas south of the actively mined areas (Figure 4). Ewes with lambs have been reported within about one mile of the active mining areas. Rams have also been documented on the Project site. Based on the observation log records maintained by USG since 2008, there have been six Peninsular bighorn sheep seen within the active mining areas (White 2019, pers. comm.). Recent Peninsular bighorn sheep sightings include one ewe on September 9, 2019, and one ram on October 21, 2019; neither animal was injured and both were allowed to wander off the mining area of their own accord (Massar 2019, pers. comm.).

The distribution of Peninsular bighorn sheep in the recovery region has not changed significantly since active monitoring began in 1992 (Colby and Botta 2018) and the available acres that support resource needs have not significantly declined since most of the habitat is within areas protected from development (see Recovery section below). Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. There are only a few known water sources within the Vallecito Mountains/Fish Creek Mountains recovery region, all of which are small, water-filled depressions in rocks, referred to as a tinajas. Based on the biological assessment (BLM 2019a), as of 2017, numerous tinajas in the Fish Creek Mountains have been dry for the past few years (prior to above-average rainfall in 2019).

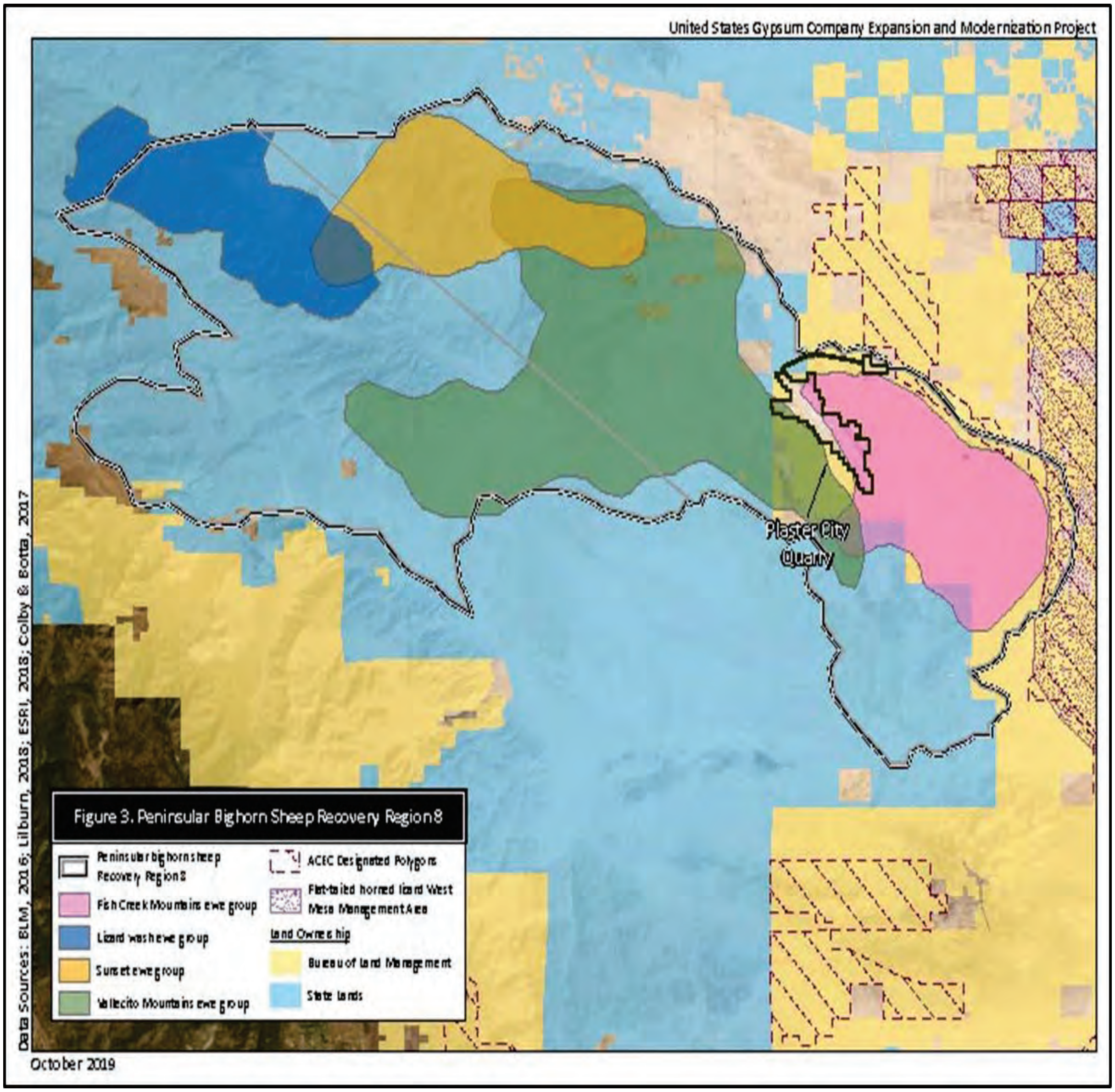

Figure 3. USG Mine Expansion and Modernization Project.

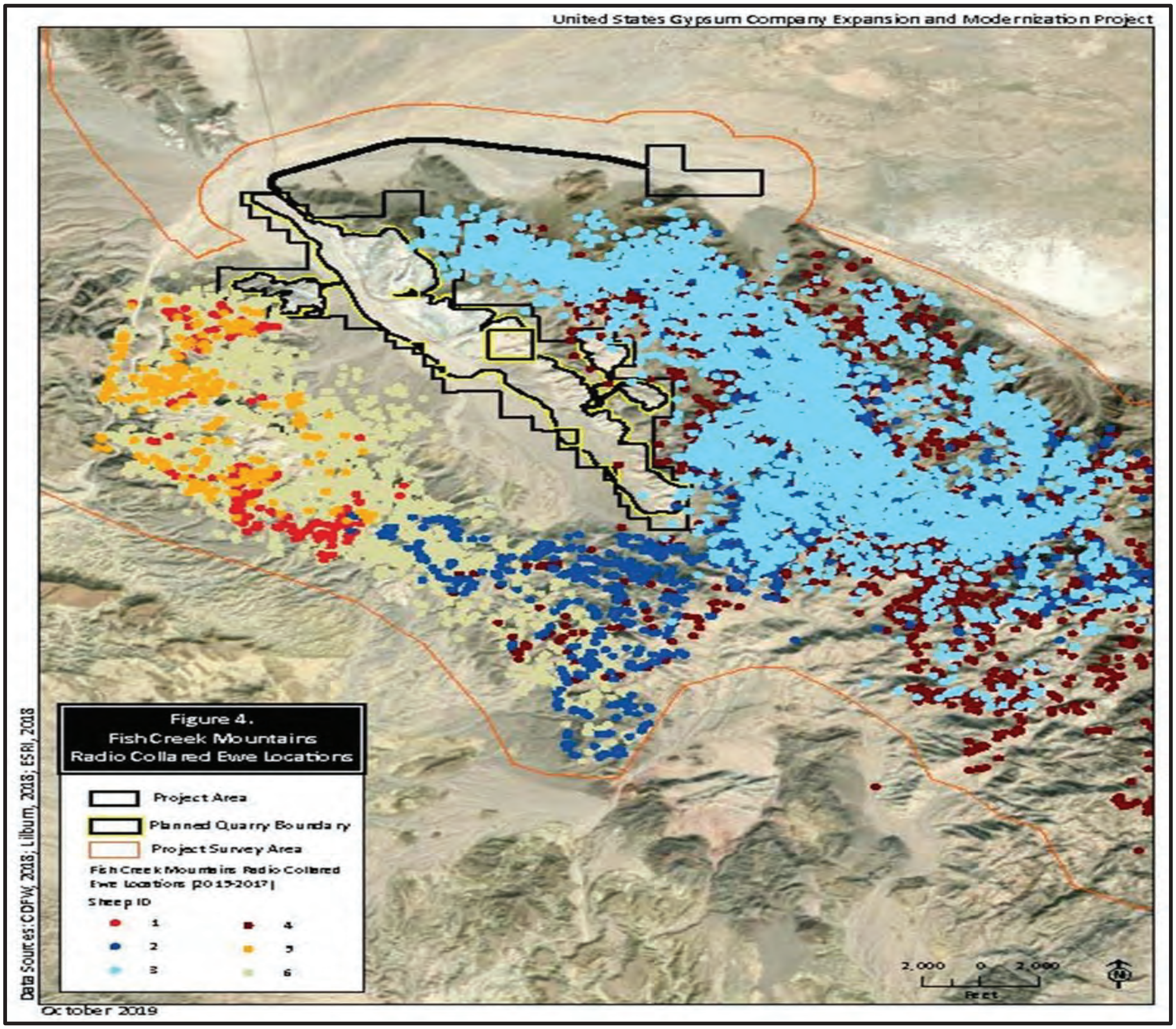

Figure 4. Radio-collared Peninsular Bighorn Sheep Locations 2015-2017

Status of Designated Critical Habitat in the Action Area

The action area is within unit 2B, the Southern Santa Rosa Mountains south to Vallecito Mountains, of Peninsular bighorn sheep designated critical habitat. This unit includes about 248,021 acres of habitat that support the physical and biological features essential to the conservation of Peninsular bighorn sheep. The action area includes about 97,077 acres of designated critical habitat. The final Peninsular bighorn sheep critical habitat rule excluded most of the existing USG mine areas from the critical habitat designation because active mining pits do not generally provide suitable habitat or suitable conditions for the Peninsular bighorn sheep (Service 2009a). However, 608.2 acres of designated critical habitat are within the planned quarry expansion area. This represents about 0.63 percent of the critical habitat within the action area and a negligible percentage of the entire designated critical habitat rangewide. Designated critical habitat in the action area contains moderate to steep rugged slopes, foothills, water sources, and alluvial fans and washes, which are the physical and biological features essential to the conservation of the species. There have been no disturbances due to wildland fires or urban development in the action area since the 2009 designation that would degrade or eliminate these physical and biological features. In addition, a majority of the acres within designated critical habitat are protected from development (see below). The undisturbed alluvial fans, washes, and foothills located in the Project's quarry expansion areas provide a high diversity of food plants that support the physical and biological features needed to meet the annual and drought-related variations in forage quality and availability and areas to maintain habitat connectivity (Service 2009a). Based on radio-collared individuals, Peninsular bighorn sheep most frequently use the habitat areas associated with the steep slopes and ridges, rather than the alluvial fans in the canyon. However, washes and alluvial fans play an important role in providing Peninsular bighorn sheep quality forage during the heat of summer months and through times of drought (Service 2009a).

Recovery

As stated above, challenges to Peninsular bighorn sheep recovery include habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Based on information in CDFW's most current Peninsular bighorn sheep monitoring report, habitat loss and lack of water sources are impediments to recovery in the Vallecito Mountains/Fish Creek Mountains recovery region (Colby and Botta 2018). The Fish Creek Mountains ewe group is more vulnerable to human disturbance since it resides adjacent to the Project's expansion areas to the west, and off-road vehicle use and target shooting on BLM lands to the east (Colby and Botta 2018). However, about 93 percent of the lands within the recovery region are protected from development since they are either within the Anza Borrego Desert State Park (ABDSP) or BLM wilderness areas (Table 3). Therefore, it is unlikely the recovery region is vulnerable to habitat fragmentation and loss due to urban and commercial development.

Table 3. Land Management Designations – Recovery region 8

Land Management	Acres
Anza Borrego Desert State Park	142,273
BLM Wilderness Area	
BLM	5,947
Private	
California State Lands Commission	1,154
San Felipe Valley Wildlife Area	
Vallecito County Park and Stage Station, San Diego County	21
Total	**173,998**

For over 30 years, staff from ABDSP has maintained numerous guzzlers within the Vallecito Mountains and sheep have become dependent upon their use. Due to drought conditions, there has been insufficient rain to fill most of the guzzlers. Currently, ABDSP and CDFW are working together to develop a long-term maintenance plan for guzzlers and access to water sources throughout ABDSP to assure year-round water availability. A few recovery actions identified in the recovery plan have been implemented in the Vallecito Mountains/Fish Creek Mountains recovery region, including providing and maintaining water sources, and securing funds and methods to monitor ewe groups.

In 2016, the estimated number of ewes in the Vallecito Mountains/Fish Creek Mountains recovery region was 101 ± 28 (Colby and Botta 2017), which exceeds one of the recovery criteria for 25 ewes necessary for downlisting. Therefore, as of the 2016 count, this recovery unit is exceeding that recovery goal. As explained in the Peninsular bighorn sheep recovery plan, these ewe groups are considered subpopulations in a metapopulation context; thus their recovery and persistence depend upon maintaining habitat connections between the ewe groups. Based on radio-collared sheep location data, Peninsular bighorn sheep are currently moving among ewe groups in the recovery region and will occasionally move to adjacent recovery regions (Colby and Botta 2018) so habitat connections appear to be suitable for movement. Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. Long-term drought, mountain lion predation, and disease episodes are the natural factors most likely to affect the population numbers in the future.

EFFECTS OF THE ACTION

Revised regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see § 402.17).

The replacement of the existing Plaster City Plant water pipeline and canal pipeline components of the Project are not expected to have adverse effects on Peninsular bighorn sheep because they would not be located in or near occupied Peninsular bighorn sheep habitat or designated critical habitat. Therefore, only the Plaster City Quarry expansion, Well No. 3 and water pipeline construction, and reclamation components of the Project are evaluated in this section.

Effects to the Species

Quarry Expansion and Operation

As mentioned in the Environmental Baseline section above, the mountains surrounding the Plaster City Quarry support four ewe groups. The number of ewes within each of these groups is unknown but the action area supported about 163 animals in 2016, about 101 of which were ewes (Colby and Botta 2017). Of these four ewe groups, the Vallecito Mountains and Fish Creek Mountains ewe groups use the mountains and foothills adjacent to the USG quarry. As such, the ewes and rams within these groups will be exposed to the activity and noise associated with the Project. These activities include site grading, quarrying, pre-milling (primary and secondary crushing and screening), reclamation, well and water pipeline construction, and transporting material via the existing narrow-gauge railroad to the Plaster City Plant for finish processing. Expansion and operation could adversely affect the Peninsular bighorn sheep that occupy these hillsides by (1) loss of suitable habitat due to vegetation removal and heavy grading, and behavioral avoidance of the mine site and adjacent habitat; (2) disrupting reproduction or lambing activities; and (3) limiting movement among ewe groups. The two ewe groups, Fish Creek Mountains and Vallecito Mountains, occurring in the mountains adjacent to the mine would be most affected by expansion activities. Direct individual injury or fatality from active mining activities is not expected to occur, for reasons explained below.

The Project would result in the loss of 608.2 acres of suitable habitat over the course of 80 years (Table 1). The loss of habitat would be incremental over that time and quarrying and reclamation activities would take place simultaneously in phases throughout the life of the mine. In general, expansion activities would proceed from currently active quarry areas in the north part of the Project site to future quarry areas (phases) in the south. Because the Project would be implemented in phases, not all 608.2 acres would be unavailable to Peninsular bighorn sheep at the same time. Since the expansion phases are located in the alluvial canyon, loss of habitat would generally result in the elimination of habitat used for foraging. Loss of forage habitat would be minimized by limiting habitat disturbance (CM 1), restoring mined sites (CM 2), and acquiring lands for long-term habitat conservation in the action area (CM 9).

Human presence, lighting, dust, blasting, and noise and vibrations from construction and heavy equipment may alter Peninsular bighorn sheep behavior in the mine vicinity. Based on a site specific noise study, as the mine expands south, noise levels will increase from faint to moderately loud, with loud to very loud level short-duration noise, such as blasting (Urban Crossroads 2018). A number of studies have been conducted to evaluate bighorn sheep responses to human activities and the general conclusion is that bighorn sheep increase their distance away from humans, especially when they are approached by people and dogs. There is evidence that under some circumstances bighorn sheep may habituate to predictable human activity through learning in response to predictable, localized, and avoidable disturbance, including highway traffic, hiking, and aircraft (Service 2000, 2011a). However, even in otherwise optimal habitat, sheep are known to abandon areas either temporarily or permanently, when the limit of their tolerance to disturbance is exceeded (Service 2000, 2011a). Based on radio-collar location data, Peninsular bighorn ewes currently use the hillsides directly above actively mined sites (Figure 4). Furthermore, studies conducted looking specifically at mining effects on other Nelson's bighorn sheep populations indicate that sheep acclimate to ongoing mining activities (Oehler *et al*. 2005, Jansen *et al*. 2007, Bleich *et al*. 2009). Based on these studies, an increase in noise activity may cause Peninsular bighorn sheep to temporarily avoid habitat adjacent to the mine they currently use as escape terrain, foraging, or movement among local ewe groups. However, we anticipate they will also acclimate to future noise and activity over time and will not abandon the hillsides adjacent to future mining activities.

As mentioned in the Environmental Baseline Section above, Peninsular bighorn sheep occupy the Fish Creek Mountains year-round so it is also likely that lambing activity (i.e., birth and nursing) occurs in the Fish Creek Mountains and Vallecito Mountains surrounding the mine site.

Ewes are particularly sensitive to disturbance during the lambing season. The CDFW recommends buffer distances between 400- to 600-yards to avoid disturbance to ewes during lambing activity (Service 2011b). Within the Fish Creek Mountains, location data from radio-collared sheep suggest the most likely lambing activity areas are located in the north-south trending canyon east of the quarry (see Figure 7 in the biological assessment). Future quarry phases 6BP, 7BP, 8, and 9 are nearest to, and are within 600 yards of, this lambing habitat, so the human disturbance and noise associated with mining activity could disrupt reproduction. However, to avoid and/or minimize adverse effects to reproduction or lambing activities, new ground-disturbing activities (i.e., initial quarry development) and blasting would not take place during lambing season (January 1– June 30), except with the approval of the Service and CDFW (CM 11). Also, no ground disturbing activities will be conducted while Peninsular bighorn sheep are within a 0.25-mile radius (440 yards) of the activity (CM 8).

Of the 608.2 acres affected by Project activities, about 368 acres include alluvial fan habitat (see Table 3 in the biological assessment) that sustains forage plant resources with sufficient nutrients to support successful reproduction. Loss of these food resources could adversely affect future reproduction success. However, this loss will occur over the course of 80 years, so not all the acres supporting forage resources will be unavailable simultaneously. Also, about 287 acres of alluvial fan habitat will remain in the canyon. Lastly, based on radio-collared location data, sheep activity is confined to the steep slopes and ridges, rather than in the canyon, so ewes in the action area likely forage outside of the canyon and closer to escape terrain.

Based on Peninsular bighorn sheep radio-collar data, at least six ewes use the mountains, foothills, and alluvial fans surrounding the USG mine. Truck and train traffic and blasting have occurred on the site since 1921, with continuous operation since 1945 and no Peninsular bighorn sheep deaths have been reported due to mining activities. Given the apparent avoidance of active quarry areas by Peninsular bighorn sheep (see Figure 4), the probability of injury or death as the mine is expanded is unlikely. In addition, USG has an active monitoring program (observation log) that entails shutting down operations once a Peninsular bighorn sheep is seen near mining activities. The animals are then monitored until they are out of harm's way. The Project includes conservation measures that will continue this active monitoring program (CM 10 and CM 11).

Expanding quarry operations would likely inhibit sheep from crossing the active quarry areas. Future mining in the southern end of the quarry expansion (Phases 8 and 9) is adjacent to habitat that currently facilitates movement and connectivity between ewe groups on either side of the canyon. Therefore, once construction starts in those phases, connectivity among ewe groups could be compromised. Based on radio-collar location data, Peninsular bighorn sheep regularly use habitat immediately adjacent to the active quarrying Phases 1A, 1B, S1, S2, and S3 (Figure 4). Based on these activity patterns, Peninsular bighorn sheep are expected to continue to occupy the foothills south of Phases 8 and 9 and movement between ewe groups would continue along those areas. Quarry areas undergoing restoration would also be accessible to Peninsular bighorn sheep, although their localized behavioral response to the disturbance involved with previously active quarry areas is unknown. However, as mentioned above, studies evaluating sheep response to mining activities in other parts of Nelson's bighorn sheep range indicate that mining activities have a minor influence on distribution. Therefore, we anticipate insignificant effects on movement and connectivity with implementation of the Project.

To summarize, loss of suitable habitat, disruption of reproduction or lambing activities, and limiting movement will be minimized, offset, or reduced over time primarily through implementation of the Project's conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). Implementation of these measures, the gradually phased nature of the Project, and the ability of Peninsular bighorn sheep to acclimate to human activity would help to ensure that mine expansion does not lead to an appreciable (measureable) reduction in reproduction, numbers, and distribution of Peninsular bighorn sheep.

Reclamation (Restoration)

Reclamation activities would entail re-contouring hillsides post-mining and would be conducted by blasting or bulldozing the benches created by mining to soften the topography. Effects to Peninsular bighorn sheep would be similar to those for mine expansion activities with increased human presence, lighting, dust, blasting, and noise and vibrations from heavy equipment. Noise or disturbance effects may cause Peninsular bighorn sheep to avoid habitat they currently use as escape terrain, foraging, or movement among local ewe groups. However, the restoration activities will result in reclaiming disturbed areas that will eventually support habitat for Peninsular bighorn sheep, mainly forage resources. Additionally, Project conservation measures will minimize potential adverse effects by minimizing habitat disturbance (CM 1), training workers to avoid adverse effects to Peninsular bighorn sheep (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and future notification of new quarry activities in active Peninsular bighorn sheep use areas (CM 12).

Based on the gradually phased nature of the project, the ability of Peninsular bighorn sheep to acclimate to human activity, and implementation of the conservation measures, the adverse effects to Peninsular bighorn sheep associated with the reclamation activities will be avoided and/or minimized. Therefore, reclamation activities are not likely to appreciably reduce the reproduction, numbers, and distribution of Peninsular bighorn sheep in the action area.

Effects to Critical Habitat

Mining activities will result in loss of 608.2 acres of designated critical habitat in Unit 2B. Unit 2B is 248,021 acres in size, of which 97,077 acres occurs in the action area. Loss of these 608.2 acres of critical habitat represents 0.63 percent of the critical habitat in the action area, 0.25 percent of the critical habitat in Unit 2B, and 0.16 percent of the total amount of critical habitat rangewide. Habitat lost through Project activities will no longer provide suitable habitat or suitable conditions for the Peninsular bighorn sheep until they are restored. Also, the almost constant presence of workers and machinery may reduce or prevent Peninsular bighorn sheep from using the active mine site for many years, thus rendering 608.2 acres of designated critical habitat unavailable to Peninsular bighorn sheep. As mentioned above, Peninsular bighorn sheep designated critical habitat in the action area provides space for breeding, feeding, and sheltering and movement among ewe groups. The mine expansion will eliminate alluvial fans and wash areas with productive soils that support annual forage areas and maintain habitat connectivity. However, based on radio-collared sheep movement, a majority of the Peninsular bighorn sheep use area is along the foothills and higher up the slopes, with occasional forays into the alluvial fans and wash areas.

Adverse effects to designated critical habitat impacts would also be minimized, offset, or reduced over time primarily through implementation of the conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The Project applicant will also conserve lands to minimize the loss of designated critical habitat on public lands within the Plaster City Quarry (CM 9) and conduct 1:1 onsite reclamation (restoration) for all Project disturbance areas. Based on implementation of the conservation measures and the small loss of designated critical habitat, the action area will retain the physical and biological features essential to the conservation of Peninsular bighorn sheep and the Project will not appreciably diminish the value of critical habitat as a whole for the conservation of Peninsular bighorn sheep.

Effects to Recovery

As described in the Environmental Baseline section, the number of Peninsular bighorn sheep in the action area has increased, adult survival rates are high, and movement among ewe groups is occurring. A recovery plan for the species was issued in 2000 and actions by several agencies and a regional habitat conservation plan are taking Peninsular bighorn sheep conservation into account. Population estimates derived during the 2016 survey indicate the number of ewes in the recovery region exceed the number needed for downlisting, which demonstrates a major milestone towards recovery (delisting). This increase in the population has occurred during active mining operations at the Project site.

The loss of 608.2 acres of available habitat within the recovery region and the noise that may lead to temporary abandonment of suitable habitat or a disruption in reproduction or lambing activities will be mitigated with implementation of conservation measures. These include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The conservation measures provided by the Applicant are commensurate to the likely Project impacts considering the species status and threats. In this context, they appropriately minimize effects of the proposed project and adequately mitigate its net, residual effects, such that it is not likely to cause significant impairment of recovery efforts for the species. Therefore, we do not anticipate the Project will lead to a significant decline in reproduction, numbers, or distribution and we do not anticipate adverse effects to recovery.

Cumulative Effects

Cumulative effects include the effects of future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has no information regarding any future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area that would have an adverse effect on Peninsular bighorn sheep that would result in a loss to reproduction, numbers, and distribution in the action area.

Conclusion

After reviewing the status, environmental baseline for the action area, effects of the proposed action, and cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Peninsular bighorn sheep or destroy or adversely modify, as a whole, designated critical habitat. We base this decision on the following:

1. While the proposed Project is adjacent to habitat with resources that support feeding, breeding, and sheltering, and Peninsular bighorn sheep occur within the mountains surrounding the Project site, location data from radio-collared sheep indicate that Peninsular bighorn sheep use the hillsides and slopes rather than the canyon where the Project is located; therefore, most of the resources to support reproduction, numbers, and distribution of the species will be avoided by mining and reclamation activities.

2. Peninsular bighorn sheep continue to use habitat in and around the action area despite active mine operations ongoing since 1921. Because ewe groups adjacent to active mining have become accustomed to some degree to human presence and noise and the Project will be implemented incrementally in phases over the course of 80 years, we expect the increase of noise and human activity would not result in sheep abandoning the hillsides around the Project site and the existing distribution of sheep around the mine will be unaffected.

3. The adverse effects of mine expansion and reclamation activities on reproduction would be avoided and/or minimized by implementation of conservation measures described above in the Description of the Proposed Action section.

4. The rugged mountain habitat on three sides of the Project, which includes critical habitat, would continue to provide necessary resources essential to the conservation of the species.

5. The potential loss of up to 608.2 acres of designated critical habitat represents a negligible percentage of the designated critical habitat otherwise available to the population in the recovery region, and this potential loss would not disrupt population connectivity or cause other significant impacts to the physical and biological features in the action area. Therefore, the Project would not result in the adverse modification or

destruction of critical habitat that would appreciably diminish the value of critical habitat as a whole for the conservation of the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below for Peninsular bighorn sheep are non-discretionary and must be undertaken by the BLM and the Corps as binding conditions of any grant or permit issued to the Applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM and the Corps have a continuing duty to regulate the activity covered by this incidental take statement. If the BLM or the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM and the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT AND EXTENT OF TAKE

Based on information from the mine site, existing mining and reclamation have caused no direct death or injury to Peninsular bighorn sheep. We anticipate that implementation of the Project will not result in death or injury to any Peninsular bighorn sheep. However, we do anticipate that Peninsular bighorn sheep inhabiting the area within and adjacent to future mine phases will alter their behavior to some extent until they habituate to the new mining activity. While we know there are at least six ewes that use the habitat around the mine, we cannot quantify the exact numbers inhabiting the two ewe groups adjacent to the mine. Nonetheless, all the sheep inhabiting these ewe groups will experience the effects of the mine expansion and may temporarily abandon areas they currently use for feeding, breeding, and sheltering, as discussed in the effects section. Therefore, we anticipate some harm to those individuals due to loss or abandonment of habitat, and we use habitat loss and disturbance as surrogates to assess take and set a clear standard for determining when the amount or extent of the taking has been exceeded. Because we cannot quantify the number of individuals, take to sheep will be exempted based on the amount of habitat that will be mined over the life of the project. Therefore, take of Peninsular bighorn sheep is anticipated and exempted as follows:

1. The loss of up to 608.2 acres of habitat from construction, operation, and reclamation activities.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy or adversely modify or destroy critical habitat for Peninsular bighorn sheep.

REASONABLE AND PRUDENT MEASURES

The Service's evaluation of the Project's effects in this biological opinion includes consideration of the conservation measures developed by the BLM and USG to reduce the adverse effects of the proposed Project on Peninsular bighorn sheep. Any subsequent changes in the conservation measures proposed by the BLM, Corps, or USG or in the conditions under which these activities will occur may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to supplement the conservation measures that were proposed by the BLM, Corps, and USG as part of the proposed action, and are necessary and appropriate to minimize the impact of the taking on Peninsular bighorn sheep.

1. The BLM, Corps, and USG shall fully implement the conservation measures for this Project as part of the proposed action to minimize the taking of Peninsular bighorn sheep.

2. The BLM, Corps, and USG shall monitor and report the level of incidental take of Peninsular bighorn sheep to the Service throughout the life of the Project and report on the effectiveness of the Project's conservation measures to reduce the impact of incidental take.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, BLM, the Corps, and USG, and their agents and contractors, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and are intended to minimize the impact of the incidental taking. These terms and conditions are non-discretionary (see section 7(o)(2)).

The following terms and conditions implement the reasonable and prudent measures above:

1. To implement reasonable and prudent measure number 1, the BLM, Corps, and USG, including all of their agents/contractors, shall fully implement all Project specifications and conservation measures outlined in this biological opinion as they relate to Peninsular bighorn sheep.

2. To implement reasonable and prudent measure number 2, the BLM, Corps, and USG shall report on compliance with and effectiveness of the Project's conservation

measures, and compliance with the established take threshold for Peninsular bighorn sheep. To do this, USG shall prepare and provide to the Service, BLM, and Corps an annual report by January 31 of each year of the Project. The annual report shall document but not be limited to the following:

a. Any activities determined by the Designated Biologist and Biological Monitors to be out of compliance with Project-specifications and conservation measures outlined in this biological opinion and the corrective measures implemented to bring the Project back into compliance.

b. The total amount and location of Peninsular bighorn sheep habitat, including designated critical habitat, disturbed by construction activities and restored by reclamation activities during the reporting year.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

Pursuant to 50 CFR § 402.14(i)(1)(v), the BLM must notify the Service immediately at 760-322-2070 (Palm Spring Fish and Wildlife Office) if any Peninsular bighorn sheep are found sick, injured, or dead in the action area. Immediate notification means verbal (if possible) and written notice within 1 workday, and must include the date, time, location, and photograph of the sick or injured animal or carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment, and care in handling dead specimens to preserve biological material in the best possible state.

The BLM must also notify the Service immediately at 760-320-2070 if any endangered or threatened species not addressed in this biological opinion is found dead or injured in the Project footprint during the life of the Project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location. Refer to the Terms and Conditions section above for details on reporting procedures.

REINITIATION NOTICE

This concludes formal consultation on the proposed Project for the Peninsular bighorn sheep. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may lapse and any further take may be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation.

If you have any questions regarding this document, please contact Felicia Sirchia of the Palm Springs Fish and Wildlife Office at 760-322-2070, extension 405; or felicia_sirchia@fws.gov.

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APPENDIX D-4:
DRAFT HABITAT
MITIGATION AND MONITORING PLAN

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DRAFT HABITAT MITIGATION AND MONITORING PLAN
for the
United States Gypsum Company Plaster City Expansion/Modernization Project
Ocotillo Wells, California

U.S. Army Corps of Engineers
File No. SPL-2014-00216-SAS

Regional Water Quality Control Board
401 Certification No. -WDID7A133159

California Department of Fish and Wildlife
SAA No. 600-2014-0067-R6; 1600-2019-0168-R6

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SUMMARY

The proposed mitigation outlined herein is compensation for impacts to aquatic resources associated with the expansion and modernization of the U.S. Gypsum Company (USG) Plaster City Mine (Expansion Project). The Expansion Project consists of a multiphase mine development plan divided into proposed development areas based upon the geological data, gypsum quantity and chemical quality, market demand, and proximity to USG's existing quarry processing plant. There are 15 development areas, or mining phases, proposed under the mine expansion work. Gypsum extraction from all mine phases is expected to require 69 years to complete. This mitigation plan provides compensatory mitigation for all impacts that are anticipated to occur within the lifespan of the Expansion Project.

The Expansion Project will result in direct, permanent impacts to a total of 139 acres of non-wetland waters of the waters of the state over a 69-year period. The first 10 years of operation will impact a total of 29.47 acres, and the subsequent 11-69 years will impact 110.02 acres. Expansion activities are estimated to require 69 years to extract 161 million tons of the gypsum deposit. Mitigation will be initiated in the first year of the mine expansion operation.

Permanent impacts to non-wetland waters at the Expansion Site will be mitigated at a 1.92:1 mitigation-to-impact-ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation locations include the Viking Ranch Restoration Site (Restoration Site), and Old Kane Springs Road Preservation Site (Preservation Site). The Preservation Site will preserve an additional 59 acres of riparian bottomland and upland resources. These mitigation locations are within the same parent watershed as the impacted aquatic resources.

Dominant vegetation habitat within the Viking Ranch Restoration Site is desert saltbush scrub, disturbed habitat, Sonoran creosote bush scrub. The jurisdictional delineation identifies a total of 53.12 acres of non-wetland waters in the form of braded channels, ephemeral channels and floodplain.

Dominant vegetation habitat within the Preservation Site include 50.55 acres of Sonoran Mixed Woody Scrub and 69.08 acres of Desert Dry Wash Woodland. The jurisdictional delineation identifies 60.99 acres of RWQCB-jurisdictional non-wetland waters present both inside and outside of alluvial fan/wash and outside of alluvial fan wash.

This Habitat Mitigation and Monitoring Plan (HMMP) provides guidelines for 108.6 acres of rehabilitation, 97.7 acres of enhancement, and 121 acres of preservation for permanent impacts to aquatic resources. and associated native desert vegetation for compensatory mitigation. The mitigation program described in this document provides information on the impacted aquatic resources, the proposed compensatory mitigation required to offset the impacted resources, guidelines for compensatory mitigation design, installation, maintenance, monitoring, reporting, performance standards, financial assurances, and long-term management.

1 PROJECT DESCRIPTION

1.1 Responsible Parties

Applicant/Permittee

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Contact: Luis Carrazco
760.358.3234

Biological Consultant

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605 Third Street
Encinitas, California 92024
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1.2 Project Background

The expansion of the Plaster City Mine, located in the Fish Creek Mountains south of Ocotillo Wells (Appendix A, Figures; Figure 1, Regional Vicinity Map), will result in direct, permanent impacts to a total of 139 acres of waters of the state over a 69 year period. The first 10 years of operation will impact a total of 29.47 acres, and the subsequent 11-69 years will impact 110.02 acres. Figures for this project are provided in Appendix A.

A multiphase mining plan (Appendix B, Anticipated Mine Schedule and Phase Plan)has been prepared for the development and extraction of gypsum reserves and to concurrently reclaim the land at USG's Quarry over the life of the mine through an approved mine reclamation plan. The proposed Expansion Project has been divided into proposed development areas based upon the geological data, quantity and chemical quality of gypsum, market demand, amount of overburden to be removed to access gypsum deposits, and proximity to USG's existing gypsum processing plant. There are 15 mine expansion areas, or mining phases, proposed under the Expansion Project. Each area has been numbered for purposes of identification only and do not represent the order in which they will be mined (Table 1). The Mine Reclamation Plan includes reclamation of individual phases upon completion of quarrying activities. The ultimate result would be a fully quarried deposit reclaimed to a state of open space. The plan includes opening new hillside quarries to remove gypsum outcrops of high-grade gypsum. The hillside quarry workings along the west-facing slope of the Fish Creek Mountains would be expanded down slope beneath the wash for recovery of subsurface gypsum deposits. Overburden (sand, gravel, and boulders) would be stripped to a depth of approximately 100 feet and used in site reclamation. Quarrying and reclamation operations would take place simultaneously in multiple phases.

Table 1
Recoverable Gypsum and Estimated Mining Life per Development Area

Development Area	Recoverable Gypsum (million tons)	Estimated Mining Life (years)
Phase 2	17.35	7.68
Phase 2P	0.24	0.10
Phase 3	12.4	4.47
Phase 3P (a)	0	0
Phase 3P (b)	2.09	0.67
Phase 4	3.89	1.71
Phase 5	4.88	2.4
Phase 6	16.82	7.39
Phase 6Bp	6.17	2.70
Phase 7	16.5	8.22
Phase 7Bp	3.1	7.39
Phase 8	23.02	11.25
Phase 9	10.46	4.44
Phase 10	1.16	0.48
Phase 10P	4.24	1.64

The mitigation program will include active restoration of approximately 163 acres within and directly adjacent to the Viking Ranch Restoration Site, 42.7 acres of enhancement directly adjacent to the Viking Ranch Restoration Site, and the preservation of 121 acres of Old Kane Springs Road (Figure 1), for a total of 326.7 acres of compensatory mitigation.

The Viking Ranch parcel was formerly agricultural land located in Borrego Springs and within Coyote Wash (Figure 1). The mitigation site is located approximately 26 miles from the USG mine impacts and within the San Felipe Creek watershed. Therefore, mitigation will occur within the same watershed as the mine impacts. Viking Ranch was historically used for orchard production until the site was purchased by the Borrego Water District in 2017. Various post-agricultural land uses have been explored including installation of percolation basins to capture storm flow and enhance groundwater recharge. Currently the land is highly disturbed, with berms designed to divert water around the site and windrows of soil and coarse woody debris that further impede the normal flows on site.

The restoration program will restore desert wash within Viking Ranch by allowing water from Coyote Creek to flow across the mitigation site with no unnatural impediments. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The diversion features will be removed to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain

The preservation program will preserve the existing desert wash, braided channels, fluvial process, and associated vegetation and wildlife within site by protecting it in-place via recordation of a permanent conservation easement, over the entire Preservation Site. The protection mechanism shall be adequate to demonstrate that the preservation site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment Permitting regulatory agencies include the Regional Water Quality Control Board (RWQCB) and the California Department of Fish and Wildlife (CDFW).

2 OBJECTIVES

The overall goal of this HMMP is to provide the appropriate compensatory mitigation for impacts to aquatic resources associated with the United States Gypsum Company (USG) Plaster City Mine Expansion/Modernization Project (Expansion Project) of 139 acres of non-wetland waters of the state. This mitigation goal is intended to be met through the following objectives:

- Re-establishment of the aquatic resources, functions, and values within and directly adjacent to the Viking Ranch Restoration Site;
- Enhancement of native habitat within and directly adjacent to the Viking Ranch Restoration Site; the quality of the existing habitat will be enhanced;
- Increased ecological benefits to off-site areas adjacent to the Viking Ranch Restoration Site.

Preservation of natural fluvial features and native habitat withing the Viking Ranch Restoration Site and the Old Kane Springs Road Preservation Site. The re-establishment and enhancement objectives will be accomplished by increasing the surface area of Coyote Creek Wash and re-establishing historic hydrologic connections and aquatic functions within ad directly adjacent to Viking Ranch. The quality of the existing habitat will be enhanced through on-site seeding and weed control. The mitigation within the Viking Ranch site will provide a net increase in habitat functions and values and aquatic resources both inside and outside of Viking Ranch.

Approximately 50 acres within the Viking Ranch Restoration Site are assumed to be jurisdictional non-wetland waters of the State. The balance of the Restoration Site (110 acres) consists of disturbed habitat, desert saltbush scrub, Sonoran creosote bush scrub, mesquite bosque, and orchards and vineyards with no observable indicators of recent water flows. Where flow occurs, it is restricted to a small aperture in the berm leading to concentrated flow that is atypical for braided desert washes. In addition, water flow is highly modified once on site by substantial topographic modification from the fallowing activities. These activities left large amounts of coarse woody debris and soil windrows that impede the normal flow of water, further modifying natural braided flow across the site. This flow had resulted in bed instability in the southeast corner of the site where a substantial head cut is forming, threatening the site with long term future adverse modification that, if not corrected, will further degrade the site and downstream jurisdictional areas.

Natural off-site waters that flow in Coyote Creek are modified by constructed berms that divert flow around the property. Approximately 8 acres of adjacent off-site desert wash area has been documented to artificially impound water upstream of the western berm. An additional approximately 42 acres of adjacent off-site desert wash does not receive flows from Coyote Creek because of the upstream diversion. Removal of the berms and diversion ditch will enhance and re-establish normal desert hydrology in these off-site areas by returning the area to a typical braided flow regime.

The existing vegetation is highly disturbed throughout the Viking Ranch Restoration Site as a result of previous farming land use. The remnant vegetation is sparse, patchy and scattered, and tree chippings were either scattered across the site or piled into windrows. Invasive, non-native vegetation is present on-site. The primary objective of this restoration is to restore natural watershed functions and allow the hydrology to dictate the braiding pattern and vegetated upland areas as the project ages over time.. As a secondary objective, seeding will be conducted using the imprinting technique and conducted on the graded areas on the upper terraces of the mitigation site (not within the contoured drainage areas). Any areas of softer sand that may not take the imprinting well, or areas in which the equipment can't access for any reason will be hand broadcast and raking. Once completed, the plants may take root in those imprinted locations, or once water flows over the mitigation areas, seeds will be carried downstream to take root where appropriate in relation to the alluvial flows.

Approximately 61 acres within the Old Kane Springs Road Preservation Site are assumed to be jurisdictional non-wetland waters of the State. The balance of the Preservation Site (59 acres) consists of Sonoran mixed woody scrub and desert dry wash woodland. The Preservation Site will preserve a total of 121 acres. These mitigation locations are within the same parent watershed as the impacted aquatic resources.

The preservation objectives will be accomplished by protecting the Restoration and Preservation Sites in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Restoration Site and Preservation Site, and promoting long-term viability of the Preservation Site's waters of the state and surrounding habitat by conducting long-term management. See Section 14.2 for the long-term management plan objectives and tasks.

2.1 Project Impacts

The proposed action within the Expansion Project will permanently impact jurisdictional tributaries (non-wetland waters of the State) located within the proposed quarry area of development (Figure 2, Impact Map). Impacts to these washes are considered permanent, because reclamation activities are not anticipated to occur until mining extraction in each phase of the quarry is completed and reclamation will only partially replace the former aquatic functions of the original washes. Table 2 presents permanent and temporary impacts to waters of the State by mine phase.

Table 2
Summary of Impacts to Non-wetland Waters of the State

Item	Impacts (acres)	
	Permanent	*Temporary*
Plaster City Quarry – Mine Expansion		
Phase 2	26.61	0
Phase 2P	2.80	0
Phase 3	4.39	0
Phase 3P (a)	1.77	0
Phase 3P (b)	3.44	0
Phase 4	21.30	0
Phase 5	13.90	0
Phase 6	7.83	0
Phase 6Bp	0.95	0
Phase 7	13.90	0
Phase 7Bp	0	0
Phase 8	14.38	0
Phase 9	3.85	0
Phase 10	1.62	0
Phase 10P	16.89	0
Subtotal	*133.63*	*0*
Plaster City Quarry – Mine Haul Roads		
Haul Road to Phase 6Bp	0.03	0
Haul Road to Phase 7Bp	0.36	0
Subtotal	*0.39*	*0*
Plaster City Quarry Water and Power Supply Elements		
Plaster City Quarry Water Pipeline, Power Line, and Well No. 3	0	0.21
Subtotal	*0*	*0.21*
Plaster City Quarry – Mill Sites		
Annex Mill Site No. 3	0.12	0
Annex Mill Site No. 4	1.53	0
Mill Site 1	0.26	0
Mill Site 2	1.76	0
Mill Site 3	0.11	0
Mill Site 4	0.09	0
Mill Site 5	0.18	0
Cactus Mill Site	1.18	0
Subtotal	*5.23*	*0*
Total	139.25	0.21

2.2 Mitigation for Permanent Impacts

The Expansion Project will permanently impact 29.47 acres over the first 10 years and 110.02 acres during years 11-69 for a total of 139.25 acres over a 69-year period. These impacts are considered permanent because restoration activities within the Expansion Project are not anticipated to occur until reclamation of the Quarry is undertaken and completed.

To offset 139.25 acres of impacts to waters of the State at the Plaster City Mine, USG proposes to rehabilitate 108.6 acres and enhance 97.7 acres of non-wetland waters within and directly adjacent to the Viking Ranch Restoration Site, and preserve 121 acres of non-wetland waters of the state within the Old Kane Springs Road Preservation Site. This provides a total of 327.3 acres of overall mitigation at a ratio of 2.35:1.

Table 3
Impacts to Aquatic Resources

Impact Type	Impact Timing	Hydraulic Regime	Impacts (Acre)	Proposed Mitigation Timing	Proposed Mitigation Type
Permanent					
Non-wetland waters	Years 1- 10 of expansion operation	Ephemeral	29.47	Concurrent Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation
Non-wetland waters	Years 11-69 of expansion operation	Ephemeral	110.02	Concurrent and Pre-Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation
Total	Years 1-69	Ephemeral	139.49	Concurrent and Pre-Mitigation	327.3 acres [a] of Rehabilitation, Enhancement, and Preservation

[a] Total mitigation acreage for impacts to non-wetland waters of the state.

Although the former orchard within Viking Ranch was abandoned several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and a hydrologic disconnection with the Coyote Creek floodplain remains. Compound channels are characterized by a single low flow meandering channel which is inset into a wider braided channel network (Graf 1988). These areas include a mosaic of terraces within the active floodplain. In a natural, uncompromised setting, this area would have frequent shifting low-flow channels and the hydrology would include the activation of braided channels after extreme flow events, meandering channels that develop after long sequence of low to moderate flow events, and a rapid widening of the floodplain in response to increase in sediment transport capacity during brief but extreme flow events (ACOE 2008b). The compound channels at Viking Ranch are deeply incised into geologic formations and no longer shift or active braided channels. Windrows of coarse organic materials from the ground up orchard trees and on-site topographic modification imped water flows from following a normal path and flow characteristics across the site.

Old Kane Springs Road bisects the Preservation Site. However, the compound channels within the Preservation Site function in a natural, uncompromised manner. The vegetation consists of Sonoran mixed woody scrub and desert dry wash woodland habitat with little non-native species. In summary, the proposed mitigation will replace, improve, or preserve the following ecological functions and values:

- Provide no net loss of aquatic resource acreage via habitat re-establishment within the former Coyote Creek wash;
- Improve functions and values of existing habitat by removing berms and ditches, large woody debris, surface irrigation pipe and stand pipes, electrical infrastructure and existing non-native species;
- Removing invasive species and weeds;
- Provide a net increase in native habitat area for wildlife including habitat;
- Replace and improve short term water storage capacity via stream channel rehabilitation;
- Improve water quality via improved nutrient uptake, reduced soil erosion and improving sediment entrapment (retention) by slowing runoff velocity and improving habitat structure, density and cover;
- Reduce downstream proliferation of invasive species propagules by removing the source via habitat enhancement and establishment.

- Preserve desert wash, braided channels, fluvial processes, and associated native vegetation and wildlife.

3 SITE SELECTION CRITERIA

The Expansion Project is located within the Salton Sea Transboundary Watershed, Anza Borrego Hydrologic Unit, Ocotillo Lower Felipe Hydrologic Area, which is the priority watershed in the Colorado River Basin Region (Water boards) identified by the National Hydrography Dataset to be located in HUC12-181002030602. The sub-watershed is 35.314 square miles. Rainwaters flow from the Fish Creek Mountains located to the east and south, and from the Split Mountain located to the west. Flows move in a north, northeasterly direction forming Fish Creek Wash. The flows eventually enter the Salton Sea located 18 miles northeast of the Plaster City Quarry (Hernandez Environmental Services 2016).

HUC 8- San Felipe Creek Watershed, 18100203; HUC 10- Fish Creek Wash, 1810020306 HUC 12 Lower Fish Creek Wash 181002030602.

Currently there are no resource agency approved ILF or Bank sites within the hydrologic unit where the Expansion Project is located. Any mitigation proposed would be "permittee responsible" meaning that the mitigation must comply with the ACOE final mitigation rule (33 CFR 332.4(c)(2) and (c)(14)). If financial assurances are required they must in place prior to commencement of the permitted activity (33 CFR 332.3(n)). Additionally, long term management requirements of the Mitigation Site must be established in a document such as an HMMP (33 CFR 332.7(d)).

3.1 Watershed Approach

The Environmental Law Institute (ELI) and the Nature Conservancy (TNC), with funding from the EPA, developed the Watershed Approach Handbook (ELI 2014). This handbook identifies five elements in the use of the watershed approach for wetland and stream restoration projects. These elements include:

1. Identification of watershed needs.
2. Identification of desired watershed outcomes.
3. Identification of potential project sites.
4. Assessment of potential sites to meet watershed needs.
5. Prioritization of projects.

3.1.1 Identification of Watershed needs

The Borrego Springs Community Plan outlines threats and needs of the surrounding watershed. Watershed needs are focused on groundwater supply, accessibility, and sustainability. However, there is acknowledgment that Coyote Creek serves as the main conduit for groundwater recharge and ecological functions.

- The aquifer is replenished primarily from the Coyote Creek flow coming from the Collins Valley to the north. Coyote Creek runs year-round in the Anza-Borrego Desert State Park and supplies water to the Borrego Valley sub-flow migration. During the infrequent seasonal rains, surface flows sometimes reach the valley floor, making their way to the Borrego Sink which is the terminal catchment basin in the area. These infrequent flows sustain the Borrego Sink eco-system.

3.1.2 Identification of Desired Outcomes

The mitigation project will result in attainment of several desired outcomes that are consistent with the community general plan. These include:

- Rehabilitate and enhance the functions and values of the San Felipe Watershed through re-establishment re-formation of fluvial features such as braided channels and sediment transport under normal episodic desert flow regimes at the Viking Ranch Restoration Site.
- Re-seeding the upper terraces of the floodplain and passive vegetation enhancement/restoration at the Viking Ranch Restoration Site. The priority of this mitigation program will focus on control of non-native vegetation through maintenance efforts. The mitigation project will provide a net increase in habitat functions and values.
- Advance the goals of the Borrego Valley Community Plan (County of San Diego 2011; amended 2014) and the Borrego Valley Groundwater Sustainability Plan (GSP; Borrego Valley Groundwater Sustainability Agency 2019).
- Preserve of existing non-wetland waters desert wash, braided channels, fluvial process, and associated vegetation and wildlife at the Old Kane Springs Road Preservation Site. Additionally, remove the threat of future development, disturbance and/or encroachment.

3.1.3 Identification of Potential Mitigation Sites

A comprehensive search for potential mitigation sites was conducted to identify appropriate sites within and outside of the impacted watershed. The search considered sites that offered preservation of existing, intact desert waters of the State, and re-establishment/rehabilitation of previously disturbed waters of the State. USG holds title to excess lands located in desert regions in the Mojave Desert. These excess lands offered opportunities for preservation and rehabilitation/enhancement of waters of the State. A brief description of each compensatory mitigation opportunity is provided below with a rationale for selection or rejection of each site as the proposed mitigation of the Expansion Project. Table 4 presents the parcels considered for compensatory mitigation and Figure 3 depicts each site location relative to the Expansion Project.

The Viking Ranch Restoration Site was selected as compensatory mitigation for the Expansion project because the site was a former agricultural field that is situated in the Coyote Creek wash. Following agricultural practices that are common in the desert, diversion ditches and berms were constructed to divert the flow of Coyote Creek around the field to protect the orchard that was planted. These diversions removed hydrology of Coyote Creek and the episodic flows that form the characteristic braided streams during flood events. Lacking hydrology, these areas are no longer considered non-wetland waters and not likely to become jurisdictional without a re-establishment project that removes the diversion features and establishes topography that fosters braided streamflow across the entire site. Compensatory mitigation activities will re-establish RWQCB jurisdiction that was lost when the agricultural field was developed. Along with hydrology, a substantial functional lift will occur to multiple aquatic functions. Viking Ranch project will provide 63 percent of the compensatory mitigation and Old Kane Springs Road will provide the remaining 37 percent of the compensatory mitigation needed to fully mitigate Expansion Project impacts over the 69-year timeframe for the mine project.

USG holds title to several properties that have resources that could be mined at a future date, but that have not yet been mined. In most cases, exploration of potential resource deposits has been conducted resulting in some site disturbance. These explorations occurred decades ago. The Midland parcels are located in the Little Maria Mountains near Midland, California, approximately 21 miles NNW of Blythe, California and approximately 95 miles NE of the Expansion Project. Drainages within this area are tributary to the Colorado River. These sites are mainly upland desert hills with small, scattered ephemeral drainages. The acreage of these drainages represents a small portion of each parcel. Therefore, use of these parcels as preservation of waters of the State was not deemed practical. In addition, the sites are out-of-watershed and of limited compensatory mitigation value.

Similarly, the Amboy parcel is located out-of-watershed. The parcel is situated at the edge of the Amboy dry lakebed approximately 2 miles south of the town of Amboy and approximately 107 miles north of the Expansion Project. While Amboy dry lakebed may be considered jurisdictional, the type of aquatic resource is different from the ephemeral drainages that would be impacted by the Expansion Project. Therefore, preservation of the parcel as compensatory mitigation was considered to be of low value for the Expansion project mitigation.

There are four separate, but contiguous, parcels that make up the Laws parcels. These parcels are located approximately 7 miles NE of Bishop, CA and approximately 330 miles NNW of the Expansion Project. As such, the parcels are out-of-watershed. The parcels are situated on the lower slopes of the White =Mountains where the mountain ridgelines meet the valley floor. Although there are ephemeral drainages within the parcels, the majority of the acreage is uplands. The distance from the project impacts and small acreage of jurisdictional area that could be preserved to offset Expansion Project impacts eliminated these parcels for consideration.

The Empire parcel is a privately held 680-acre parcel located in the Fish Creek floodplain and watershed. The site is approximately four miles north of the Expansion project. The parcel is situated in an area of braided ephemeral channels and desert habitat. On-site vegetation appears to be relatively intact with little non-native vegetation. While the proximity to impacts provides greater value of this property to offset impacts, the site only presents opportunities to preserve aquatic features and resources. This parcel was rejected because it could not compensate for the entire Expansion Project impacts.

The Old Kane Springs Road parcel is a privately owned parcel located approximately 3 miles southwest of Ocotillo Wells and 10 miles northwest of the mine project. The 121-acre parcel is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. The property is situated within an unnamed desert and all of the property is subject to flow during episodic rainfall events. Fluvial features are present in all areas of the property except for the maintained unpaved roadway. However, fluvial drainage patterns are not interrupted by the road, suggesting that during flood events, the road does not pose an impediment to flow. Other private parcels are present within the area but the predominate ownership in the area is Anza Borrego State Park. The property is zoned for low density residential development (one unit/40 acres) and therefore the property is under threat of development.

Table 4
Potential Compensatory Mitigation Sites

Parcel Name	Mitigation Type	Assessor's Parcel Number	County	In/Out of Watershed	Latitude	Longitude	Size (acres)
Midland	Preservation	809-150-003	Riverside	Out	30°51'59" N	114°31'34" W	160
Midland	Preservation	809-170-002	Riverside	Out	33°50'15" N	114°50'54" W	142
Midland	Preservation	809-170-003	Riverside	Out	33°50'28" N	114°50'01" W	103
Midland	Preservation	809-170-004	Riverside	Out	33°50'20" N	114°50'15" W	19.8
Midland	Preservation	809-170-022	Riverside	Out	33°50'27" N	114°50'35" W	39.9

Midland	Preservation	809-052-002	Riverside	Out	33°54'36" N	114°49'31" W	39.5
Amboy	Preservation	055-611-118	San Bernardino	Out	34°31'34" N	115°44'46" W	552
Laws	Preservation	4 parcels	Inyo	Out	37°26'56" N	118°17'22" W	2,472
Empire	Preservation	033-010003	Imperial	In	33°04'02" N	116°03'50" W	680
Viking Ranch	Re-Establishment	140-030-09	San Diego	In	33°19'43" N	116°21'17" W	62.5
Viking Ranch	Re-Establishment	140-030-11	San Diego	In	33°19'43" N	116°21'17" W	87.5
Viking Ranch	Re-Establishment	140-030-10	San Diego	In	33°19'43" N	116°21'17" W	9.75
Yuha Creek	Enhancement	BLM	Imperial	Out	32°44'23" N	115°47'42" W	n/a
Old Kane Springs Road	Preservation		San Diego	In	33°07'23" N	116°10'46" W	121

Additional compensatory mitigation sites were explored prior to settling on the Viking Ranch and Old Kane Springs Road sites. The Seville Solar project is being constructed on former agricultural fields approximately 6 miles east of Ocotillo Wells and immediately south of Highway 78. Lots 1-3 of that project share similar characteristics with Viking Ranch because these fields were constructed using a diversion in a branch of San Filipe Creek. Unfortunately, the lots already have an approve Conditional Use Permit (CUP) from Imperial County that allows for development of these parcels. Therefore, these parcels are not available for compensatory mitigation.

The Yuha Creek Wash was reviewed for potential mitigation. In accordance with Bureau of Land Management (BLM) policy, the Expansion Project will have to mitigate the effects of another project within the Yuha Creek Area of Ecological Concern (ACEC). The mitigation would remove tamarisk trees that dot the Yuha Creek wash. Tamarisk occur at very low density, limiting the compensatory value of this mitigation opportunity. The project area is out-of-watershed. Therefore, this mitigation opportunity was rejected in favor of a higher value mitigation site.

3.1.4 Assessment of Potential Mitigation Sites to Meet Watershed Needs

Both the Expansion Project and the Viking Ranch Site are located within the San Felipe Watershed. The Restoration Site occurs in a natural setting with self-sustaining hydrology sources (surface water, groundwater, and precipitation) from the surrounding mountains encompassing a watershed area of approximately 164 square miles (Figure 1). It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203; with the upper northeastern half within HUC 10 Coyote Creek 1810020302, HUC 12 Lower Coyote Creek 181002030206; and the lower southwestern half within

HUC 10 Borrego Valley-Borrego Sink Wash 1810020303, HUC 12 Borrego Valley 181002030303.The Viking Ranch Restoration Site is located approximately 26 miles from the USG mine impacts and within the San Felipe watershed. Viking Ranch was historically used for orchard production until the site was purchased by the Borrego Water District in 2017. Agricultural land modifications including excavation of ditches and creation of berms were constructed that diverted hydrology of Coyote Creek around the agricultural field. Before abandoning the agricultural field, the orchard was chopped up and placed throughout the project site in windrows. These windrows further diverted any waters that did enter the site and stunted natural recruitment of native species. The site is currently vacant land. Approximately 116 acres of the 160-acre site was formerly used for agriculture.

Implementation of the Viking Ranch restoration will improve and increase water infiltration and groundwater recharge by spreading water flows across the full Coyote Creek floodplain. This will be accomplished by preserving the site in perpetuity and removing historical topographic modifications that were used to divert water around the Viking Ranch orchard. These features concentrated flow, increased water velocity, and decreased the resident time needed to maximize water infiltration. Restoration of normal braided stream flow across the site will create greater opportunity for flood flows to contact more acreage and infiltrate into the coarse floodplain soils.

The Old Kane Springs Road Preservation Site is located approximately 7 miles north-west from the USG mine Expansion Project and within the San Felipe watershed. It occurs in a natural setting with self-sustaining hydrology sources (surface water, groundwater, and precipitation) from the surrounding mountains encompassing a watershed area of approximately 164 square miles (Figure 1). It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion HUC 8, Lower Borrego Valley 1810020305 HUC 10, Upper Lower Borrego Valley 181002030502 HUC 12.

All three of these sub-basins (Expansion Site, Restoration Site, and Preservation Site) drain to the Salton Sea, which is the receiving water. Of greatest ecological significance is San Felipe Creek, which supports a population of desert pupfish and persists in discharging groundwater from upstream regions.

3.1.5 Prioritization of Mitigation Projects

Given the limited available lands for purchase and/or mitigation opportunities and the overall intact nature of the San Felipe watershed, locating, prioritizing, and modeling multiple restoration locations was not necessary in order to select the mitigation sites.

3.2 Mitigation Site Locations

The Viking Ranch Restoration Site is located north-east of the town of Borrego Springs in San Diego County, California (Figure 1). The Restoration Site is located on the U.S. Geological Survey (USGS) 7.5 minute Clark Dry Lake quadrangle map (Clark Lake NW quarter) in the southeast corner of Section 4, Township 10 South, and Range 6 East. The Restoration Site consists of approximately 206.3 acres of land (160 acres within its boundary and 46 acres directly adjacent to the site boundary) located roughly 0.5 miles east of the north end of Di Gorgio Road. The site is in unincorporated San Diego County, northeast of the City of Borrego Springs, California. APNs 140-030-09-00, 140-030-10-00, and 140-030-11-00 comprise the site.

The Old Kane Springs Road site is located southwest of the community of Ocotillo Wells, California, south of Highway 78 and west of Split Mountain Road. The approximately 120-acre site spans privately owned desert open space along Old Kane Springs Road in the far eastern portion of San Diego County, California (Figure 1, Project Location). The approximate center of the Mitigation site is 33.122841° N and -116.179786° W (decimal degrees).

4 BASELINE INFORMATION

Baseline conditions are included below and are used to help determine the appropriate compensatory mitigation, success criteria, and guide mitigation design, installation and maintenance.

4.1 Viking Ranch Baseline Conditions

The proposed Viking Ranch Restoration Site is located within the Borrego Springs Groundwater Subbasin 7-024.01 (DWR 2016) and the Anza Borrego Hydrologic Unit of the Ocotillo Lower Felipe Hydraulic Area (Hydrological Area Code 722.20) and in the Groundwater Basin 7-24 Ocotillo Wells. The site is underline by Pleistocene to Holocene marine and continental sedimentary rock. The Coyote Creek fault bisects the northeast corner of the property.

General topographic information for the site and the surrounding area was obtained from a review of the Clark Dry Lake and Borrego Palm Canyon 7.5-minute U.S. Geological Survey topographic map (Figure 1), and from a site reconnaissance. The topography of the site slopes gently from the northwest to the southeast. The elevation of the site ranges from 700- to less than 750-feet above mean sea level.

4.1.1 Hydrology

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year. Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation (Hernandez Environmental Services 2016).

A site reconnaissance of the Viking Ranch site was conducted on June 1, 2018, by Hugh McManus of Dudek. The site reconnaissance consisted of walking the site and viewing adjacent properties from the site. Photographs are included in Appendix C. The site was accessed by a dirt road roughly 0.5 miles east of the end of the paved section of Di Giorgio Road. No residence or other habitable structures were observed on the site. Evidence of past agricultural activity was observed in the form of irrigation lines and remnants of chipped trees in windrows. Additional notable observations include a decommissioned water well, a power distribution board, electrical power hook ups, debris, containers storing oil, and a weather station maintained and operated by University of California Irvine (UCI 2018; Dudek 2018).

Coyote creek splits just northwest of the project site and bisects both the southwestern and northeastern corners of the site. Berms, located along the entire north side of the site, appear to divert flood water from the north to the east and off the site (Photograph 7). Surface water appeared to have flowed over areas of the site. Various water-cut channels and mud cracks were observed, likely due to runoff of water from high rainfall events (Dudek 2018).

Surface water was observed flowing along the southern boundary of the site from the west to the east (Photograph 8). The source of the surface water was not observed due to dense vegetation but was likely irrigation water from the adjacent property to the south. Surface water was flowing at roughly 0.25 cubic feet per second (cfs) [1] and sustained flow for over 50 feet prior to infiltrating into the underlying sediments. Plant health and type near the surface water flow indicated that surface water regularly flows in that area. Surface water was not observed flowing off of the site (see Dudek 2018).

No unnatural pits, ponds, or lagoons were observed on site. Ponding of stormwater likely occurs in various low points on the site as observed by the presence of mud cracks (Photograph 9). Incised channels, likely associated with Coyote Creek flooding, were observed throughout the site (Photograph 10).

A water well was observed on a cement pad on the southwest corner of the site. According to the well log obtained from the California Department of Water Resources (DWR), the well was drilled in 1993 and completed to 700 feet below ground surface (bgs) (Appendix D). The well appears to be equipped with a turbine discharge head and impeller shaft (Photograph 16). The well was not equipped with a motor or power and appeared decommissioned. A groundwater level measurement was not recorded from the well due the absence of an access port or sounding tube. The well was not capped or locked and was partially open to the environment. No cisterns, cesspools, or septic tanks were observed on the site.

Traces of Coyote Creek currently bisect the property and, based on observations during the site reconnaissance, surface water occasionally flows southeast across the site during high rainfall events. Based on a review of historical aerial imagery and topographic maps, Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the Expansion Project. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding Coyote and Indianhead mountains and which provides runoff to the surrounding watershed, and potentially from irrigation runoff from adjacent farmlands.

Agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. Based on a review of historical aerial imagery, the majority of water was diverted around the north end of the mitigation site.

Based on sources searched by Environmental Data Resources (EDR), five water wells were mapped within 1 mile of the site. Water wells are located to the south of the site. The most recent water level measurement for the nearest well was recorded in 2008 and is approximately 336.34 feet below ground surface (bgs) (USGS 2018). During the site reconnaissance, one additional water well was observed near the southwest corner of the site. The most recent water level measurements from the on-site well was recorded in 2008 and measured 340.10 feet bgs (USGS 2018). The highest groundwater level measurement from the on-site well was recorded in 1998 and measured 250 feet bgs (USGS 2018).

The California Division of Oil, Gas, and Geothermal Resources online database was reviewed for wells on/near the site (DOGGR 2018). According to this database, which shows all known oil and gas wells in the state, no oil, gas, or geothermal wells are/were located on the site. No oil, gas, or geothermal wells are located within 10 miles of the site.

4.1.1.1 Jurisdictional Delineation

The jurisdictional wetland delineation was conducted in accordance with the methods prescribed in the 1987 Wetland Delineation Manual (ACOE 1987), the 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (ACOE 2008a), and A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (ACOE 2008b). The information required to process an approved jurisdictional determination in accordance with the ACOE/U.S. Environmental Protection Agency (EPA) Rapanos Guidance (ACOE and EPA 2008) was gathered for the Viking Ranch site. During the jurisdictional delineation survey, the site was walked and evaluated for evidence of an ordinary high water mark, surface water, saturation, wetland vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations (Figure 4).

Pursuant to the federal Clean Water Act, ACOE and RWQCB, jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. Areas regulated by the RWQCB are generally coincident with the ACOE, but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act.

A predominance of hydrophytic vegetation, where associated with a stream channel, was used to delineate CDFW-regulated riparian areas. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

Features that convey or hold water are regulated by multiple agencies. Federal, state, and local agencies have different definitions and terminology for these types of features. Water-dependent resources regulated by ACOE, RWQCB, CDFW, and the County are collectively referred to as jurisdictional aquatic resources herein. Terminology used in this document to distinguish each jurisdictional aquatic resource according to the agency that regulates the resource is as follows:

- **ACOE and RWQCB:** "Wetland" and "non-wetland waters." Wetland waters of the United States and non-wetland waters of the United States are subject to regulation by ACOE and RWQCB, pursuant to the Clean Water Act. Within the mitigation site, ACOE waters of the United States, and RWQCB waters of the United States overlap, and therefore are combined under one term: "non-wetland waters".
- **CDFW:** "Riparian areas" and "streambeds." Lakes, rivers, and streambeds, including any associated riparian habitat, are subject to regulation by CDFW, pursuant to the California Fish and Game Code. Within the mitigation site, CDFW streambeds are synonymous with ACOE and RWQCB non-wetland waters.

The County's RPO (County of San Diego 2012) identifies environmental resources, including wetlands, present within the County, and provides measures to preserve these resources. The RPO defines wetlands as lands that have one or more of the following attributes: (1) lands that periodically support a predominance of hydrophytes (plants whose habitat is water or very wet places); (2) lands in which the substratum is predominantly undrained hydric soil; or (3) lands where an ephemeral or perennial stream is present and whose substratum is predominantly non-soil, and where such lands contribute substantially to the biological functions or values of wetlands in the drainage system. County-regulated wetlands would be identified where a predominance of hydrophytic vegetation is associated with a stream channel.

During the jurisdictional delineation surveys, the mitigation site was walked and evaluated for evidence of an ordinary high water mark, surface water, saturation, wetland or hydrophytic vegetation, and nexus to a traditional navigable water of the United States. The extent of any identified jurisdictional areas was determined by mapping the areas with similar vegetation and topography to the sampled locations.

Results of the jurisdictional delineation are shown in Table 5, on Figure 4, and the jurisdictional delineation raw data forms in Appendix E. There are approximately 53.12 acres of RWQCB-jurisdictional non-wetland waters present within a braided channel, ephemeral channels, and floodplain on the Viking Ranch site. However, the condition of these jurisdictional areas remain highly modified from the historic agricultural use including remnant windows of chipped trees and topographic modifications that alter the normal braided water flows across the Viking Ranch Site.

Table 5
Jurisdictional Resources

General Vegetation Community/Land Cover Category	Vegetation Type (Oberbauer Code[a])	Jurisdictional Resource Type			Acres
		Braided Channel	*Ephemeral Channel*	*Floodplain*	
Disturbed or Developed Areas (10000)	Disturbed Habitat (11300)	—	0.04	—	0.04
	Orchards and Vineyards (18100)	—	0.44	—	0.44
Disturbed or Developed Areas Subtotal		—	*0.48*	—	*0.48*
Riparian and Bottomland Habitat (60000)	Mesquite Bosque (61820)	0.23	—	14.92	15.15
Riparian and Bottomland Habitat Subtotal		*0.23*	—	*14.92*	*15.15*
Scrub and Chaparral (30000)	Desert Saltbush Scrub (36110)	0.10	0.04	—	0.14
	Sonoran Creosote Bush Scrub (33100)	0.09	0.02	35.89	36.00
	Sonoran Wash Scrub (33230)	1.35	—	—	1.35
Scrub and Chaparral Subtotal		*1.54*	*0.06*	*35.89*	*37.49*
Total RWQCB Non-Wetland Waters and CDFW Streambeds[b]		1.77	0.54	50.81	53.12

[a] Oberbauer et al. (2008).
[b] Totals may not sum due to rounding.

4.1.2 Soil Conditions

Soils on the site are mapped as Carrizo (CeC) very gravelly sand, 0% to 9% slopes, eroded; and Rositas (RsA) loamy coarse sand, 0% to 2% slopes (USDA 2019).

According to the Natural Resource Conservation Service (NRCS), the Carrizo series consists of very deep, excessively drained soils formed in mixed igneous alluvium. Carrizo soils are on numerous landforms on flood plains, fan piedmonts and bolson floors. Slopes range from 0% to 15%. The mean annual precipitation is about 100 millimeters (4 inches) and the mean annual air temperature is about 21.5°C (71°F) (USDA 2019). Carrizo extremely gravelly sand, rangeland and wildlife habitat. (Colors are for dry soil unless otherwise noted.) The soil surface is covered by approximately 70% gravel, 6% cobbles and 4% stones. Soil moisture control section: usually dry, moist in some parts for short periods during winter and early spring and for 10 to 20 days cumulative between July and September following convection storms. The soils have a typic-aridic soil moisture regime. These soils are excessively drained; negligible to low runoff; high saturated hydraulic conductivity. These soils are used for rangeland, recreation and wildlife habitat. Present vegetation is creosote bush, burrobush and range ratany (USDA 2019).

The Rositas series consists of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets. Slope ranges from 0% to 30% with hummocky or dune micro relief. Mean annual precipitation is about 4 inches and the mean annual air temperature is about 72°F. The soil is within the aridic soil moisture regime and is usually dry and is not moist for as long as 60 consecutive days, the driest being during the months of May and June. Organic matter is less than 0.5% and decreases regularly with depth. These soils are used for rangeland and wildlife habitat, and growing citrus fruits, grapes, alfalfa, and truck crops. Present vegetation is creosote bush, white bursage, desert buckwheat and mesquite (USDA 2019).

An evaluation of soils and soil sampling is included as part of the Preliminary Environmental Site Assessment Report (Dudek 2018). A summary of the findings is included below.

- No subsurface geologic investigations were performed as part of the Preliminary ESA. According to the U.S. Department of Agriculture National Cooperative Soil Survey, the site is mapped as underlain by Rositas loamy coarse sand and Carrizo very gravelly sand. Rositas and Carrizo soils are well- to excessively drained sands and gravels with high infiltration rates (NRCS 2018).
- Soil samples collected at the site were below laboratory reporting limits for pesticides and herbicides (Appendix F). Ten soil samples were collected and analyzed for OCPs by Environmental Protection Agency (EPA) Method 8081A. No OCPs were detected at or above the laboratory reporting limits in any of the ten samples analyzed. Laboratory reporting limits are below regulatory screening levels. Arsenic was detected above regulatory screening levels but below the acceptable background concentration (Dudek 2018). The site is currently fallow farmland land and unoccupied by human habitation. Historical use of the site consists of a citrus farm. Adjacent and nearby properties have included undeveloped land and agriculture. Based on the records reviewed and visual observations of surrounding properties, it is unlikely that adjacent or surrounding properties have impacted the environmental conditions at the site. Dudek identified items of concern in connection with the site. These items are discussed below along with recommendations (Dudek 2018):
    - Two oil filled plastic containers observed on the site should be removed and properly disposed of in accordance with applicable local, state, and federal guidelines.

- Stained soil was observed on the site near a cement platform located in the southwest corner of the site. The stained soil should be removed and disposed of in accordance with applicable local, state, and federal guidelines.
- A water well was located on the site. If the owner of the site plans to use the well in the future, the well should be capped with a lockable lid. If no future use of the well is planned, the turbine discharge head and impeller shaft should be removed and the well should be abandoned in accordance with local, state, and federal guidelines. Alternatively, the well may be converted to a monitoring well.
- Surface water was observed flowing on the site from the adjacent property to the south. The source of the surface water should be identified. The surface water should then be prevented from entering the site or rerouted off of the site. Surface water from unknown sources has the potential to carry contamination onto the site.
- There was no detection of OCPs and herbicides in the soil samples collected. Arsenic was detected in all five of the soil samples, but was below DTSC-accepted background concentrations. Dudek does not recommend additional soil sampling for OCPs, herbicides and/or arsenic. However, additional soil sampling could be requested by regulatory agencies for future permitting requirements.

No additional soil testing will be completed within the proposed Restoration Site as this is a passive restoration exercise and therefore amendment of soils in not necessary as there is an existing native seed bank.

4.1.3 Existing Vegetation

The existing vegetation is highly disturbed throughout the mitigation site as a result of the previous land use as an orchard. The proposed Restoration Site is currently a mixture of sparse, scattered, patchy, or remnant vegetation. Tree chippings were either compiled into windrows or spread evenly as ground cover (Photograph 1). Tree stumps and larger branches were observed on site (Photograph 2). Windblown sand and sediment have covered tree chippings in some areas, especially the northwest section (Photograph 3). Black plastic irrigation lines were observed in areas of chipped trees both at the surface and in the ground (Photographs 4 and 5). Vertically installed polyvinyl chloride (PVC) pipes, assumed to be used for irrigation, were observed on the site (Photograph 6) (Dudek 2018).

Four native vegetation communities and two land cover types were mapped by Dudek biologists within the Restoration Site (Table 6). These vegetation communities and land cover types are described below. Their spatial distributions are presented in Figure 4. These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al.

2008). Vegetation communities considered special status may require mitigation by the County (County of San Diego 2010).

Table 6
Vegetation Communities and Land Covers Types within the Viking Ranch Restoration Site

Vegetation Communities and Land Cover Types		
Vegetation Class (Oberbauer Code)	*Vegetation Type (Oberbauer Code)*	*Total (Acres)*
Disturbed and Developed Areas (10000)	Disturbed Habitat (11300)	49.0
	Orchards and Vineyards (18100)	1.9
	Disturbed and Developed Areas Subtotal	50.9
Scrub and Chaparral (30000)	Sonoran Creosote Bush Scrub (33100)[b]	53.2
	Sonoran Wash Scrub (33230)[b]	1.4
	Desert Saltbush Scrub (36110)[b]	35.0
	Scrub and Chaparral Subtotal	89.6
Riparian and Bottomland Habitat (60000)	*Mesquite Bosque (61820)[b]*	*19.5*
	Riparian and Bottomland Habitat Subtotal[c]	*19.5*
	Total[c]	160

[a] Oberbauer et al. (2008).
[b] Considered special status by the County (2010).
[c] Totals may not sum due to rounding.

4.1.3.1 Disturbed Habitat (11300)

Disturbed habitats are areas that have been physically disturbed and are no longer recognizable as a native or naturalized vegetation association (Oberbauer et al. 2008). These areas may continue to retain soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Examples of these areas may include graded landscapes or areas, graded firebreaks, graded construction pads, temporary construction staging areas, off-road-vehicle trails, areas repeatedly cleared for fuel management, or areas that are repeatedly used in ways that prevent revegetation (e.g., parking lots, trails that have persisted for years).

Within the Restoration Site, disturbed habitat is mapped primarily in the eastern portion of the Project Site and is characterized by the disturbed soils and lines of wood chip mulch and the predominance of Russian-thistle (*Salsola paulsenii, S. tragus*) with some Mediterranean schismus (*Schismus barbatus*). There is no significant shrub cover, but occasional patches of plicate tiquilia (*Tiquilia plicata*) and desert dicoria (*Dicoria canescens*) are present in some areas.

4.1.3.2 Orchards and Vineyards (18100)

Orchards and vineyards are usually artificially irrigated and dominated by one (or sometimes several) non-native tree or shrub species. Understory growth of orchards and vineyards often include short grasses and other herbaceous plants between the rows of trees or vines (Oberbauer et al. 2008). Although orchards and vineyards are of limited value to most native plants and animals, they can provide nesting and perching sites for several bird species.

On site, orchards and vineyards is mapped along the southern boundary in the eastern portion of the Restoration Site where a windrow of horsetail tree (*Casuarina equisetifolia*) has been planted, as well as rows of citrus trees. The citrus trees may actually be located on the adjacent parcel. The edges of the orchard in the eastern portion of the site include giant reed (*Arundo donax*), saltcedar (*Tamarix ramosissima*) and honey mesquite (*Prosopis glandulosa* var. *torreyana*).

4.1.3.3 Sonoran Creosote Bush Scrub (33100)

Sonoran creosote bush scrub is an upland vegetation type that is dominated by creosote bush (*Larrea tridentata*) and may include white bur-sage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and ocotillo (*Fouquieria splendens* ssp. *splendens*). Shrubs are generally widely spaced; the ground layer is generally dominated by bare ground with seasonal ephemeral herbs (Oberbauer et al. 2008).

Sonoran creosote scrub dominates the southwestern portion of the Restoration Site and also occurs in the northeastern and northwestern corners. The Sonoran creosote scrub on site is dominated by creosote and includes the following associated species: four-wing saltbush (*Atriplex canescens*), desert dicoria, and white bur-sage. The understory is dominated by sparse Mediterranean schismus, but some areas include cryptantha (*Cryptantha* spp.). Overall, the community is sparse with less than 15% total vegetative cover. Disturbance of this community is evident with tree chippings patchily distributed throughout.

4.1.3.4 Sonoran Wash Scrub (33230)

Sonoran wash scrub is a desert wash vegetation community located in the drier parts of desert streams. This community is generally dominated or co-dominated by leafy burrobush (*Ambrosia monogyra*), desert-lavender (*Condea emoryi*), and/or chuperosa (*Justicia californica*). Other associated species include catclaw acacia (*Senegalia greggii*), desert willow (*Chilopsis linearis* ssp. *arcuata*), dalea (*Psorothamnus* spp.), ironwood (Oln*eya tesota*), and/or mesquite (*Prosopis glandulosa*) (Oberbauer et al. 2008).

Sonoran wash scrub occurs in a wash in the northeastern corner of the Restoration Site. On site, this community is co-dominated by desert dicoria and creosote bush with smoke tree (*Psorothamnus spinosus*). Other species with less cover include desert willow, leafy burrobush, many-fruit saltbush

(*Atriplex polycarpa*), and plicate tiquilia. Overall, vegetation density is relatively low with less than 10% cover. The community is disturbed with evidence of tree chippings in clumps throughout.

4.1.3.5 Desert Saltbush Scrub (36110)

Desert saltbush scrub is typically strongly dominated by a single saltbush (*Atriplex* spp.) species with some succulent species. This community occurs in areas with high alkalinity and/or salinity (Oberbauer et al. 2008).

Desert saltbush scrub occurs in the northwestern and southeastern portions of the project site. On site, this community is generally dominated by many-fruit saltbush. Associated species include creosote bush, desert dicoria, smoke tree, honey mesquite, arrow weed (*Pluchea sericea*), barbwire Russian-thistle (*Salsola paulsenii*), white bur-sage, cryptantha, and four-wing saltbush. In the southern portion of the site, this open community is codominated by big saltbush (*Atriplex lentiformis*), many-fruit saltbush, and desert-holly (*Atriplex hymenelytra*) and moderately disturbed by Russian-thistle, Mediterranean schismus, and mustard (*Sisymbrium* spp.). There is also evidence of past orchard use within the desert saltbush scrub on site (i.e., soil disturbance and tree chippings). Overall, the community is sparse with low cover of shrubs.

4.1.3.6 Mesquite Bosque (61820)

Mesquite bosque is a drought-deciduous streamside thorn forest dominated by mesquite with scattered saltbush and open understories dominated by annual and perennial grasses. This community is generally maintained by frequent flooding or fire (Oberbauer et al. 2008).

On site, mesquite bosque occurs in a swath that extends from the northwestern quadrant to the southeastern corner of the site. This community on site is generally dominated by mesquite and many-fruit saltbush. Some smoke tree, tamarisk (*Tamarix* spp.), creosote, and desert willow are also present at low cover. The understory generally consists of scattered Mediterranean schismus. Overall, the community is relatively open with less that approximately 20% vegetation cover. Much of the mesquite bosque is mapped within the floodplain on site (see Section 4.1.1.1).

For additional information on the existing plant species, see Appendix G of this report.

4.1.4 Wildlife Evaluation

A general biological survey and habitat assessment for sensitive species was conducted on the Restoration Site on October 17, 2019 by Callie Amoaku and Kathleen Dayton. Wildlife species that were observed were documented and an evaluation of wildlife resources and potential to occur is included as a summary below.

Fifteen species of wildlife were observed during the surveys. Seven species of birds were observed including black phoebe (*Sayornis nigricans)*, black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineata*), loggerhead shrike (*Lanius ludovicianus*), orange-crowned warbler (*Oreothlypis celata*) rock wren (*Salpinctes obsoletus*), and Say's phoebe (*Sayornis saya*). One reptile, desert iguana (*Dipsosaurus dorsalis*) and Five mammals were recorded on site including bobcat (*Lynx rufus*), black-tailed jackrabbit (*Lepus californicus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). No amphibian species were recorded during surveys.

No special-status amphibians or reptiles were observed within the Restoration Site or have high potential to occur in the Restoration Site.

Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a low potential to occur based on the current status of the habitat. The site is covered in Mediterranean schismus, woody debris, and shrubs. As the upland areas are re-established on the Restoration Site, FTHL would have a moderate potential to occur. The re-establishment of waters and seeding of the area would provide higher quality habitat.

Two special-status birds were observed within the Restoration Site, black-tailed gnatcatcher and loggerhead shrike. Additionally, Swainson's hawk has a high potential to forage within the Restoration Site, however, there is insufficient nesting habitat.

One special-status mammal was observed within the Restoration Site, San Diego black-tailed jack. The site contains open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur in the Restoration Site.

Peninsular bighorn sheep (*Ovis Canadensis nelson*; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Restoration Site boundaries. Composition of dominant plant species is similar to adjacent habitat. The OHV use within PBS habitat is expected to be little to none, as trespass is expected to be minimal. The area west of the site Restoration Site is owned by the Anza Borrego Foundation, the areas north and east of the Restoration Site are a part of Anza Borrego State Park and patrolled by State Parks, and areas south of the Restoration Site are privately owned orchards (Figure 3). Due to the degradation of the potential PBS foraging habitat within the Restoration Site, the re-establishment of waters and seeding of the area would provide higher quality habitat.

In order to avoid impacts to nesting birds the clearing of vegetation shall occur outside of the migratory bird nesting season. Grading of the Restoration Site should take place between September 1st and March 1st. If grading must occur during the nesting season a qualified wildlife biologist shall conduct a nesting bird survey prior to clearing work. If an active nest is found it shall be protected in place with a work-free buffer with a radius determined by the biologist in consultation with the CDFW.

For additional information on the existing wildlife species, see Appendix H of this report.

4.1.5 Restoration Site Cultural Resources Evaluation

A record search for potential cultural resources was conducted by Dudek archeologists for the Restoration Site. No cultural resources have been recorded within the proposed Restoration Site and within a 1-mile buffer area. Appendix I includes verification that SHPO has approved the reports. While no significant impacts or known tribal resources have been identified, there is potential for the proposed project to result in impacts on unknown subsurface tribal resources during grading. Cultural monitoring is recommended during earth disturbance work during restoration implementation.

4.1.6 Native Plant Communities to be Enhanced

As a part of this restoration program a native seed mix will be imprinted within the graded upland areas. Creosote habitat will be enhanced by removing the windrows, reconnecting the aquatic hydrology, and seeding the graded areas. See Section 7, Mitigation Work Plan for restoration information.

This HMMP is intended to satisfy mitigation requirements for the Expansion project. The mitigation proposed is compensatory mitigation to offset jurisdictional impacts to aquatic resources, outlined in Section 2, Objectives, of this report.

4.2 Old Kane Springs Road Baseline Conditions

The proposed Old Kane Springs Road Preservation Site is located within the Borrego Valley Groundwater Basin, and the Ocotillo Wells Groundwater Subbasin 7-024.02 (County of San Diego 2019). It is directly north of the Anza Borrego State Park, and bordered to the south by the Vallecito Mountains, a flat valley to the east, and undulating gullied lands to the north and west. The Preservation Site is within the San Felipe Creek 18100203 HUC 8, Lower Borrego Valley 1810020305 HUC 10, Upper Lower Borrego Valley 181002030502 HUC 12.

General topographic information for the site and the surrounding area was obtained from a review of the Harper Canyon and Borrego Mountain 7.5-minute U.S. Geological Survey topographic map

(Figure 1). The topography of the site slopes gently from the southwest down to the northeast. The elevation of the site ranges from 360 to 440 feet above mean sea level

4.2.1 Hydrology

Based on a review of historical aerial imagery and topographic maps, the area receives water from direct precipitation that flows from the Vallecito Mountains into an unnamed stream that flows down to the valley floor. The stream meanders across the site creating braided channels through the unconfined basin area. The Preservation Site is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the Expansion Project.

According to USFWS NWI mapping (USFWS 2021), riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately 4 miles east of the site; at this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers is unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.2.1.1 Jurisdictional Delineation

The site was evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of any potential aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity. To assist in the mapping of non-wetland waters, data was collected using the USACE's *A Field Guide to the Identification of the Ordinary High Water Mark* (*OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008). Dudek also utilized the *Episodic Stream Indicator Data Sheet* of the California Energy Commission (CEC) document *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (CEC 2014) to document several of the features within the study area. These data sheets can be found in Appendix K.

Since no hydrophytic vegetation and/or associated wetlands were present on the site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel.

Non-wetland waters were delineated using a Trimble R1 GNSS Receiver with Esri Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the top of bank of each feature. OHWM data forms describing channel attributes across the site are included in Appendix K.

4.1 Non-Wetland Waters

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels within the desert dry wash woodland vegetation community; this wash was mapped from bank to bank to include all low-flow channels within its banks as one large non-wetland water. Additionally, several smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features in the study area deemed to be potentially jurisdictional are displayed in Figure 3, Aquatic Resources Map.

Non-wetland waters on site are ephemeral meaning they only flow during storm events. These features were mapped because they had evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks. These features are classified as non-wetland waters and are likely regulated by RWQCB and CDFW as waters of the state.

4.2 Swales

Several potential swale features without well-defined banks may present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but may be considered jurisdictional upon agency review; they can be added to the map using aerial signatures at a later date if needed. Representative photos of these potential swale features are provided in Appendix J.

Results of the jurisdictional delineation are summarized in Table 7, on Figure 5, and the jurisdictional delineation raw data forms in Appendix K. There are approximately 60.99 acres of RWQCB-jurisdictional non-wetland waters present both inside and outside of alluvial fan/wash and outside of alluvial fan wash.

Table 7
Jurisdictional Resources within the Preservation Site

Type	Jurisdiction	Acres[a]
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQCB	59.76
Non-Wetland Waters of the State (Outside of Alluvial Fan/Wash)	CDFW and RWQCB	*1.23*
Total ACOE/RWQCB Non-Wetland Waters and CDFW Streambeds[b]		60.99

[a] Totals may not sum due to rounding.

4.2.2 Soil Conditions

Federal and state soil mapping typically used to obtain data on soils underlaying the Preservation Site are not available within the boundaries of the Mitigation site (UC Davis/NRCS 2021). However, based on topographic features it appears that the adjacent soil series adjacent soils include are mapped as Carrizo (CeC) very gravelly sand, 0% to 9% slopes, eroded; Riverwash (Rm), Rositas (RsC) loamy coarse sand, 2% to 9% slopes , and Sloping gullied land (SrD) (USDA 2019).

The Carrioz and Rositas soil series are described above in Section 4.1.2. According to the Natural Resource Conservation Service (NRCS), Sloping gullied lands are drainageways containing minor components of hydric soils. Gullys are steep-sided channels caused by erosion and cut in unconsolidated materials by concentrated by intermittent flow of water. Riverwash are drainageways with parent material of sandy gravelly or cobbly alluvium derived from mixed sources. These areas are excessively drained (USDA 2019).

No soil testing will be completed within the proposed Preservation Site as no restoration will occur within this site and therefore amendment of soils in not necessary as there is an existing native seed bank.

4.2.3 Existing Vegetation

Two native vegetation communities were mapped by Dudek biologists within the Preservation Site (Table 8). These vegetation communities are described below. Their spatial distributions are presented in Figure 6. These vegetation communities follow the Draft Vegetation Communities of San Diego County (Oberbauer et al. 2008).

Table 8
Vegetation Communities within the Old Kane Road Preservation Site

Vegetation Communities		
Vegetation Class (Oberbauer Code)	*Vegetation Type (Oberbauer Code)*	*Total (Acres)*
Scrub and Chaparral (30000)	Sonoran Mixed Woody Scrub (33210) [b]	50.55
Riparian and Bottomland Habitat (60000)	Desert Dry Wash Woodland (62200) [b]	69.08
	Totalc	119.63

[a] Oberbauer et al. (2008).
[b] Considered special status by the County (2010).
[c] Totals may not sum due to rounding.

4.2.3.1 Sonoran Mixed Woody Scrub (33210)

Sonoran Mixed Woody Scrub is described as a Colorado desert community with mixed woody species occurring on well-drained slopes and alluvial fans, usually at the base of mountains. The three most characteristic species of this community also dominate this vegetation community on site: creosote bush, white bursage and ocotillo (Oberbauer et al. 2008).

This community occurs outside of the well-defined alluvial fans/drainages on the site.

4.2.3.2 Desert Dry Wash Woodland (62200)

Desert Dry Wash Woodland is described as an open to dense, drought-deciduous riparian scrub woodland 30-60 feet tall that is typically dominated by ironwood, desert willow) or blue palo verde (*Parkinsonia florida*). It occurs in sandy, gravelly washes and arroyos of the lower Mojave and Colorado deserts. These washes typically have braided channels that are substantially rearranged with every surface flow event (Oberbauer et al. 2008).

On site, this community is dominated by ironwood and occupies the main alluvial fan/wash in the center of the site. Scattered creosote bush shrubs occur within this community, along with white bursage.

For additional information on the existing plant species, see Appendix L of this report.

4.2.4 Wildlife Evaluation

A general biological survey and habitat assessment for sensitive species was conducted on the Preservation Site September 1, 2021 by Dudek biologists Callie Amoaku, Cody Schaaf, Erin Bergman and Charles Adams.. Wildlife species that were observed were documented and an evaluation of wildlife resources and potential to occur is included as a summary below.

Seven species of wildlife were observed during the surveys. Two species of birds were observed including bushtit (*Psaltriparus minimus*), and mourning dove (*Zenaida macroura*). One invertebrate, dainty sulphur (*Nathalis iole*) Two reptiles sidewinder (*Crotalus cerastes)* and tiger whiptail (*Aspidoscelis tigris*), and Two mammals were recorded on site including desert kangaroo rat (*Dipodomys deserti)* and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)No amphibian species were recorded during surveys.

No special-status amphibians, reptiles, or birds were observed within the Preservation Site or have high potential to occur in the Preservation Site.

Flat-tailed horned lizard (*Phrynosoma mcallii*; FTHL) has a moderate potential to occur based on the habitat present at the site.

One special-status mammal was observed within the Preservation Site, San Diego black-tailed jack. The site contains open and disturbed area, which this species prefers. No other special-status mammals have high potential to occur in the Preservation Site.

Peninsular bighorn sheep (*Ovis Canadensis nelson*; PBS) habitat (i.e., areas classified by USFWS as Essential Habitat) occurs adjacent to the Preservation Site boundaries. Composition of dominant plant species is similar to adjacent habitat.

For additional information on the existing wildlife species, see Appendix M of this report.

5 DETERMINATION OF MITIGATION CREDITS

Definitions of establishment and rehabilitation vary between regulatory agencies. For the purpose of this Plan, the following definitions apply:

Rehabilitation Manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing the natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function but does not result in a gain in aquatic resource area (ACOE 2015) This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW.

Enhancement is defined as Manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area (ACOE 2015). This mitigation type is generally referred to as enhancement by This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW,

Preservation Removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions (ACOE 2015). This mitigation type is generally referred to as enhancement by This mitigation type is generally referred to as rehabilitation by RWQCB, and as restoration by CDFW,

5.1 Viking Ranch Restoration Site

Restoration on the Viking Ranch Site will provide rehabilitation and enhancement mitigation credits. Rehabilitation of approximately 108 acres will remove impediments to flows, restore the natural fluvial functions of desert wash, and improve the native desert saltbush scrub. Enhancement will take place on approximately 50 acres within the Viking Ranch Restoration Site, approximately 8 acres directly east (upstream) of the restoration site, and approximately 42 acres west (downstream) of the Restoration Site through the removal of natural impediments to flow and passive restoration on-site. The Restoration Site is designed to be self-functioning and self-sustaining after the 10-year maintenance and monitoring period. Factors that affect the mitigation on the Restoration Site are included below.

- The Expansion Project will be implemented over a long period. It is currently estimated that mining activities will require 69 years to extract 161 million tons of the gypsum deposit (See table of anticipated mine schedule in Appendix B). Restoration will be initiated on Viking Ranch in the first year of the mine operation. Compensatory mitigation has been discussed for the impact acreage that would occur in the first 10 years of mine operations., consistent with Permittee-Responsible Mitigation where mitigation is concurrent with impacts, even though the primary functional impact associated with waters of the state is hydrology that is replaced early in the mitigation process. The balance of the mitigation required will be fully implemented after the first 10 years of mining prior to years 11-69 of mining..
- It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion Project.
- The mitigation is desert wash and therefore in-kind mitigation.
- A portion of the Restoration Site presently experiences episodic water flow from Coyote Creek where water has broken through the perimeter berm and flowed onto the site. These flow areas were mapped using submeter global positioning system (GPS) equipment. Approximately 50 acres are assumed to be jurisdictional and the balance of the mitigation site (108 acres) is not jurisdictional due to the effects of agricultural practices. Where flow occurs, it is restricted to a small aperture in the berm leading to concentrated flow that is atypical for braided desert washes. In addition, water flow is highly modified once on site by substantial topographic modification from the fallowing activities. These activities left large amounts of coarse woody debris and soil windrows that impede the normal flow of water, further modifying natural braided flow across the site. This flow had resulted in bed instability in the southeast corner of the site where a substantial head cut is forming, threatening the site with long term future adverse modification that, if not corrected, will further degrade the site and areas downstream.
- A structure will be required at the southeast corner of the site where bed instability has occurred from land modifications leading to a six-foot head cut. A grade structure will be built to stabilize the bed and create a transition from the mitigation site to the downstream channel. This structure would become obsolete and unnecessary if downstream orchards are retired and restored as contemplated in the Borrego Groundwater Sustainability Plan.
- Natural off-site water flow in Coyote Creek is modified by the berms that diverts flow around the property. Approximately 8 acres of adjacent off-site desert wash area has been documented to artificially impound water upstream of the western berm. Removal of the berms and diversion ditch will enhance and re-establish normal desert hydrology in these off-site areas by returning the area to a typical braided flow regime. Beneficial effects that

will result from berm removal include natural transport of suspended fine soil particles that have accumulated in the ponded areas and stifled vegetation recruitment.

- Similarly, approximately 34 acres of off-site areas downstream of the Restoration Site currently do not receive flows from Coyote Creek due to the diversion ditch and berm. Removal of the diversion features will re-establish creek flows and, in so doing, improve a number of aquatic functions that benefit species diversity, wildlife habitat, and groundwater recharge.
- Additional compensatory mitigation credit (in the form of enhancement) for the off-site benefits created by the proposed restoration may be granted in accordance with the ACOE Regulatory Guidance Letter (September 25, 2018; ACOE 2018) for the Determination of Mitigation Credits for the Removal of Obsolete Dams and Other in stream structures.

5.2 Old Kane Springs Road Preservation Site

Preservation of approximately 121 acres within the Old Kane Springs Road Preservation Site will removal of a threat of development within the parcel preventing the decline of aquatic resources and associated native vegetation providing preservation credit. Factors that affect the mitigation are included below.

- As Previously discussed, the Expansion Project will be implemented over a long period. It is currently estimated that mining activities will require 69 years to extract 161 million tons of the gypsum deposit. The Preservation Site will be protected in place once the permanent conservation easement has been accepted by the RWQCB. The balance of the mitigation required will be fully implemented after the first 10 years of mining prior to years 11-69 of mining.
- This 121-acre site will preserve the existing desert wash, braided channels, fluvial process, and associated vegetation and wildlife within site by protecting it in-place via recordation of a permanent conservation easement, over the entire Preservation Site.
- It is located within the same Parent Watershed, HUC 8, San Felipe Creek Watershed 18100203 as the Expansion Project.
- The Preservation Site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment.

5.3 Overall Mitigation Ratio

Determination of mitigation ratio, type of mitigation, and location of off-site mitigation was based on coordination with regulatory agencies and are presented in Table 9. All permanent impacts to aquatic resources will be mitigated at a 1.92:1 (overall) mitigation- ratio, and include a 108.6 acre rehabilitation component, a 97.7 acre enhancement component, and a 61 acre preservation component for a total of 267.3 acres of mitigation.

Table 9. Project Mitigation for Permanent Impacts to the Expansion Project

Expansion Project Impact Type	Expansion Project Impact Acreage	Hydraulic Regime	Mitigation Timing	Location of Mitigation	Mitigation Type	Mitigation Ratio	Mitigation Acreage
Non-wetland Waters	139.49	Ephemeral	Concurrent and Pre-mitigation	Viking Ranch Restoration Site	Rehabilitation	0.78:1	108.6
					Enhancement	0.7:1	97.7
				Old Kane Springs Road Preservation Site	Preservation	0.44:1	61.0
Total	139.49	--	--		--	1.92:1	267.3

6 SITE PROTECTION MEASURES

6.1 Viking Ranch

The Restoration Site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on three sides and by active orchards on the south with restricted access. A locked gate will be installed across the access road into the site to restrict vehicular access to the Restoration site.

Prior to completion of the 10-year mitigation program the Restoration Site will be protected in-place via recordation of a permanent conservation easement, over the entire Restoration Site. The protection mechanism shall be adequate to demonstrate that the Restoration Site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the Restoration Site. The well will be retained on site as a groundwater monitoring well to be used exclusively by the Borrego Water District. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the Restoration Site where these easements/uses do not currently exist. Upon meeting the final success criteria the site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

6.2 Old Kane Springs Road

The preservation site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on all sides with restricted access. A locked gate will be installed across access roads into the site to restrict vehicular access to the preservation site.

the preservation site will be protected in-place via recordation of a permanent conservation easement, over the entire preservation site. The protection mechanism shall be adequate to demonstrate that the preservation site will be protected in-place in perpetuity without threat of future development, disturbance and/or encroachment. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the preservation site. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the Restoration Site where these easements/uses do not currently exist.

The preservation site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

7 MITIGATION WORK PLAN

This section describes in detail who will be responsible for each task and how the proposed compensatory mitigation program will be accomplished.

7.1 Viking Ranch Restoration Site

7.1.1 Project Implementation Personnel

7.1.1.1 Permittee/Project Manager

United States Gypsum Company (USG) will own the property once acquisition from the Borrego Water District is complete. As the permittee, USG will be responsible for restoration implementation, installation and successful implementation of this HMMP. Project management will be provided by USG (or subsequent legal owners) who shall be financially responsible for the implementation and management of this project.

7.1.1.2 Project Biologist

USG will select a qualified Project Biologist who will review the environmental permits, documents, final HMMP and restoration construction documents; and help to ensure that all site protections, pre-work bird surveys, and any other required items are adequately performed prior to beginning restoration work.

The Project Biologist will perform site monitoring during restoration implementation and throughout the 10-year maintenance and monitoring period. The project biologist will prepare restoration annual reports with required biological data and submit them to USG and the regulatory agencies. The Project Biologist shall have a degree in biology, ecology, or related field and be able to demonstrate experience with similar restoration projects in San Diego County. The Project Biologist shall possess at least 10 years of habitat restoration experience in Southern California.

7.1.1.3 Restoration Contractor

USG will select a qualified Restoration Contractor to implement the restoration installation work and provide subsequent Restoration Site maintenance. Restoration installation work shall be performed by a contractor possessing a valid California landscape contractor’s license (Class C-27), who has previous experience with native habitat restoration in San Diego County and who can demonstrate at least three successful similar restoration projects in Southern California. The contractor must be able to identify California native plants and common weed species and demonstrate knowledge of habitat restoration techniques.

The contractor will be responsible for conformance to (1) this HMMP, and (2) regulatory agency permit requirements. The contractor's responsibility for installation will continue until successful completion and final acceptance by USG and the Project Biologist. The contractor will not be released from contractual obligations for installation until written notification is received from USG, that all required installation tasks as defined in the installation contract, final plans and specifications, this HMMP, and the project permits have been successfully completed.

After initial installation and completion of implementation, USG will contract for 10 years of maintenance services performed by a qualified maintenance contractor that specializes in the maintenance/management of habitat restoration/natural lands. Maintenance work shall be performed as indicated herein and per the Project Biologist's recommendations. USG may choose to hire a maintenance contractor that is separate from the installation contractor or relieve a contractor that fails to perform work satisfactorily.

7.1.1.4 Seed Supplier

The seed supplier must be a qualified commercial native plant seed supplier, having collection sources from within the San Felipe Watershed area, and must have experience collecting seeds from native upland desert areas appropriate for this restoration project.

Conditions for seed collection should follow sound ecological restoration practices. The project biologist may substitute plant species should the species listed in the HMMP not be available at the time of collection as appropriate. Seed collection shall comply with all resource agency permits and requirements.

7.1.2 Site Preparation

Site preparation shall be conducted under direction from USG and the Project Biologist. The grading has been designed to ensure the flows of Coyote Creek have an equal chance to flow across any portion of the compensatory Restoration Site as appropriate for the watershed location and physical/hydrologic condition (Figure 1). The site topography is designed to allow flows to freely migrate laterally over the re-established floodplain to create naturally braided channels.

Specific site preparation tasks are outlined below. Prior to site preparation, photo points will be selected and pre-implementation photos taken to document site conditions prior to restoration implementation.

7.1.2.1 Weed and Invasive Species Removal

Prior to vegetation removal the Restoration Contractor shall meet with the Project Biologist to determine the best way to access the areas and remove vegetation without damaging adjacent native habitat. Although a former orchard was demolished several years ago, the fallowing process was not conducted in a manner that re-established normal desert ecological systems on the property and the hydraulic disconnection with Coyote Creek remains. Orchard debris wood chips and larger stumps and branches remain a significant impediment to flow as well as diversion berms and ditches. The project will clean the site of all large and/or coarse woody debris, surface irrigation pipe, irrigation stand pipes, electrical infrastructure, etc. Existing native and non-native vegetation will be removed where necessary. Topsoil containing the seed bank of existing native vegetation will be retained on site.

Within the Restoration Site the non-native tamarisk shall be cut to grade and treated with a systemic herbicide approved for use in wetland areas. Cut tree segments shall be carefully removed from the site avoiding damage to adjacent habitat. Any other non-native herbaceous species present in the enhancement areas shall be removed using hand tools. Cut vegetation shall be bagged/containerized and disposed of off-site in a legal manner.

7.1.2.2 Grading

Following non-native vegetation removal, the northern berm and diversion ditch will be backfilled and leveled with the adjacent upstream topography to remove the impediment to downgradient braided flow (Figure 7, Conceptual Mitigation Plan). The eastern berm will be graded to create numerous breaks in the berm to create multiple flow paths for flood waters to enter the Restoration Site. Portions of the eastern berm will be retained as dune features where possible, without impeding re-establishment of braided flow onto the Restoration Site from the floodplain to the east and northeast of the Restoration Site. Interior non-jurisdictional areas of the Restoration Site will be graded to provide the opportunity for flood water to flow in braided pattern across the entire Restoration Site. No soil import or export is anticipated for the project.

The overall site will be graded to be compatible with the surrounding native land surface elevations, setting the top 2” of topsoil aside and used for final grade. Rough contour grading of ephemeral channels will take place to create micro-topographic variances as shown in Figure 7. The design is intended to re-establish braided flow patterns across the Restoration Site, consistent with adjacent Coyote Creek wash. It is anticipated that flood flows will naturally create macro- and micro-topographic fluvial features within the Restoration Site and a diversity of hydrologic and geomorphic conditions, leading to characteristic desert plant communities and animal habitat. The final grade shall be reviewed and approved by the Project Biologist prior to removing grading equipment off site.

A grade structure is planned to be constructed in the south east corner of the project where channel incision sis beginning to run up into the proposed Restoration Site. If left unchecked, the head cut will continue to migrate upstream into the Restoration Site resulting in erosion of the land surface and destabilization of the floodplain. The structure will be constructed of wood timbers and slats to retain the soil on the Restoration Site (Figure 8, Typical Retaining Grade Structure Detail). The effect of the structure will be to retain the upstream channel bed to stabilize the head cut that is presently causing unnatural flow and erosion on the site. The structure will be built to withstand water flow over the top, creating a stable bed gradient upstream (within the Restorations Site)and allowing water to continue flowing to the lower elevation floodplain present downstream.

Long term, the Restoration Site will once again become part of the wash and will receive hydrologic inputs from the surface flows of Coyote Creek.

Final Restoration Site construction grading plans and specifications shall be prepared by a registered landscape architect and, or civil engineer in consultation with the Project Biologist. Final structure alteration plans are subject to regulatory agency approval.

7.1.2.3 Erosion Control BMPs

Heavy sediment transport is a typical function of desert washes and flood plains. The intent of the restoration project is to return the former agricultural field into the functional floodplain of Coyote Creek wash. As such, the goal of the project is to provide a stable land surface under dynamic flow conditions. It is expected that sediment will be deposited and exported from the Restoration Site during flood events. Erosion control best management practices (BMPs) will be used where necessary to maintain normal sediment transport functions while limiting destabilization of the Restoration Site. In general, the native vegetation established through seeding will provide effective erosion control, however additional BMPs such as burlap encased straw wattles/fiber rolls or burlap gravel bags may be needed, as determined by the Project Biologist and, or Qualified SWPPP Practitioner (QSP). Any recommendations made by the QSP or anyone else for the Restoration Site shall be pre-approved by the Project Biologist. BMPs with nylon netting shall not be used in Restoration Site. All straw wattles/fiber rolls shall be certified free of noxious weeds. Erosion control seeding may not be applied to Restoration Site unless pre-approved by the Project Biologist. Non-native seeds shall be avoided at all times

7.1.2.4 Interim Weed Control

If weed seedlings are detected following initial site clearing work and before planting and seeding occurs the Restoration Contractor shall remove all weeds. Areas to be seeded shall be completely free of weeds and have only bare mineral soil exposed at the time of seeding. Weed control will include hand-pulling of weeds, use of hand tools, weed whips, and/or foliar treatments of appropriate herbicides as determined by the Biological Monitor. Specific herbicide application rates and methods will be based on manufacturer specifications, and will follow the general guidelines summarized below:

- Application methods will follow manufacturer specifications regarding application and safety procedures. Herbicide application shall comply with state and local regulations. All application tasks will be performed by or under supervision of a licensed applicator with the Pest Control Business License issued by the State of California Department of Parks and Recreation (DPR) and registered with the County Agricultural Commissioner.
- Herbicide Application will consist of (1) spot applications to individual plants where weed coverage is sparse and (2) broadcast applications to dense patches of weed species. Applications should be uniform and complete. Contact with native species must be avoided; in the event of gusty winds or winds in excess of 5 miles per hour (mph), application work will be temporarily discontinued to protect applicators and adjacent natural resources. Treatments should also be temporarily discontinued in the event of rainfall since rainfall reduces the effectiveness of the herbicide.
- Sprayed vegetation should be left undisturbed for 7 days to allow the herbicide to be distributed throughout the entire plant. Visible effects of herbicide application consist of wilted foliage, brown foliage, and disintegrated root material.
- All dead weed materials shall be removed from the soil surface and disposed of.

7.1.2.5 Seed Selection

A native seed mix of appropriate desert plant species that are present within the Coyote Creek Wash will be imprinted onto the Restoration Site (Table 10). Should imprinting cause grade changes, seed drilling may be required in some areas in order to maintain flow. All seed will be of local origin within the San Felipe Creek watershed. Should the seed be unavailable, the Project Biologist will provide a suitable substitute, if applicable and as availability provides.

The seed mix is intended to augment the existing seed bank and natural transport of seed and propagules from the surrounding native landscape. Seed bank augmentation will help accelerate vegetation establishment and species diversity. However, this plan relies solely on passive vegetation recruitment due to the infeasibility of irrigation and the episodic nature of rain in the desert. It should be noted that vegetation recruitment is not necessary to re-establish or enhance waters of the state and this is consistent with the project impacts to waters of the state functions.

Once the Restoration Site has been graded, temporary BMPs installed, and the soil surface free of weeds, and trash, seeding may occur under direction of the Project Biologist. Fall and early winter are optimal seeding times in terms of natural rainfall potential, and dormancy of many plant species.

Table 10
Desert Saltbush Scrub Seed Mix

Botanical Name	Common Name	Percent P/G[a]	Application Rate (Pounds/Acre)
Ambrosia dumosa	White bursage	90/50	3.0
Ambrosia salsola	Cheesebush	95/50	3.0
Atriplex canescens	Four-wing saltbush	95/40	1.0
Atriplex polycarpa	many-fruit saltbush	75/50	4.0
Baileya multiradiata	Desert Marigold	95/85	1.0
Croton californica	California croton	90/40	0.5
Cryptantha angustifolia	Narrow-leaved Cryptantha	20/40	0.5
Dicoria canescens	desert dicoria	n/a	1.0
Larrea tridentata	Creosote bush	90/40	2.0
Prosopis glandulosa	mesquite	95/50	0.5
Tiquilia plicata	Plicate coldenia	n/a	0.5
		Total	18.0

[a] All seed will originate from within the watershed either from previous seed collections or field collected for this project. Seed purity and germination can vary dramatically for field collected seed from wild populations. The purity and germination rates shown are typical of each species.

7.1.2.6 Seed Application

All seeds shall be clearly labeled showing type of seed, test date, the name of the supplier, origins, and percentage of the following: pure seed, crop seed, inert matter, weed seed, noxious weeds, and total germination content. All material will be delivered to the site in original, unopened bags bearing the seed supplier's guaranteed analysis. Prior to delivery and application the restoration Contractor shall submit material data including copies of the seed bag certificates to the Project Biologist for review and approval.

The seed will be applied using the seed imprinting technique as described below:

- Any seed indicated on the drawings as requiring pretreatment shall be treated by the seed supplier prior to shipment.
- The seed box/bin shall be mounted above the roller and calibrated to disperse seed at the required rates as indicated on the drawings. The seed bin shall be cleared of all residual seed prior to loading seed mix. Seed bin shall have the ability to drop seed on the roller or in front on the ground in front of the imprinter.

- The imprinting operation shall be carried out on bare earth or on land that has only a minimal vegetative cover
- Seed imprinting shall be performed within 24 hours after a light rain (0.75 to 1.5 inches in a 24-hour period).
- Imprint impressions shall be V-shaped and approximately 4 to 6 inches in depth. Faces of imprints shall join to make an angle between 60 and 90 degrees. Length of each imprint shall be 10 inches. Imprinting teeth shall be arranged in alternating patterns with the ends of the teeth separated by 2 inches to discourage water channeling.
- The long dimension of the imprint shall be parallel with slope contours.
- Imprinting shall provide a raised soil ridge that prevents continuous movement of water between impressions.
- At least 75% of all imprinted surfaces shall bear quality impressions, apart from areas deemed unsuitable due to shallow soils, rocks, or other natural features.
- Seed dispensed by the imprinting device shall be in firm contact with the soil.
- A minimum of 75% of all impressions shall reach full tooth depth of approximately 4-6 inches and shall have smooth and firm soil on the impression surface area.
- Imprinter shall operate at a speed that allows full tooth penetration and dispersal of seed at the required rates (typically between 2-5 miles per hour).
- Wheat bran or approval substitute shall be mixed with seed to appropriate dilution ratio to prevent seed segregation. The optimum mixing radio is usually 1:1 by volume.
- Where unusual site conditions (fences, sign posts, at-grade features, etc.) prevent the seed imprinting machine from reaching completely to the edge of the revegetation area, hand seed and hand rake in the seed mix to ensure 100% seed coverage of these areas.

Additional seed may be hand broadcast and raked into the soil if the seed of selected species is not available at the time of initial imprinting. The contractor should consult the Project Biologist in the event that a given species on the plant palette is not be available for inclusion into the initial seed mix installation.

7.1.2.7 Avoidance and Minimization Measures

Temporary post and rope fencing will be installed at the limits of the restoration footprint (including around the diversion ditch, staging areas, and access routes) to prevent inadvertent impacts to areas outside of the restoration footprint.

Impacts from fugitive dust that may occur during berm demolition, filling of the diversion ditch, and Restoration Site grading, would be avoided to the maximum extent practicable and minimized through water application for dust control during grading activities.

A biologist will be on site to oversee installation of temporary fencing, any grading within 100 feet of existing waters of the state to ensure permit compliance (404, other permits for the project), and educate contractors as needed on biological resources associated with the project.

Equipment will be checked for fluid leaks prior to operation and repaired as necessary. A spill kit for each piece of construction related equipment should be on site and must be used in the event of a spill.

7.1.2.8 Fencing and Signage

The Restoration Site is bordered by Government owned land to the north and east, by the Anza Borrego Foundation to the west, and private property to the south. Although trespassing is low in the surrounding areas and so not anticipated on the Restoration Site, the contractor shall install free standing gates at the access point and/or bollards for extra protection. Fencing that entraps or otherwise adversely impacts wildlife shall not be used. Temporary fencing will not be installed around enhancement areas or the stream channel establishment area.

Signage shall be installed to at the gate(s) to identify the site as a habitat restoration project, and that trespassing and access from unauthorized personnel is prohibited.

7.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance information for this site.

8 MAINTENANCE PLAN

Maintenance activities will begin upon completion and approval of installation work. The Restoration Contractor's maintenance activities shall be performed as indicated herein and as necessary to meet the established performance standards.

8.1 Maintenance Guidelines

8.1.1 Viking Ranch Restoration Site

Following installation, site maintenance shall occur quarterly (seasonally) throughout the 10-year maintenance and monitoring period, or more frequently if needed to meet the performance standards indicated herein. During the first year following completion of project installation, maintenance visits will be conducted monthly during spring months when germination and rapid plant growth are anticipated, then quarterly for the remainder of each monitoring year. A schedule is shown in Table 11.

Table 11
Viking Ranch Restoration Site Maintenance Schedule

Year	Weed and Pest Control	General Site Maintenance	Erosion Control and Sedimentation	Fencing and Signage Maintenance
1	Monthly (spring); Quarterly thereafter	Monthly	Monthly when recorded rainfall occurs	Monthly (spring); Quarterly thereafter
2	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
3	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
4	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
5	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
6	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
7	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
8	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
9	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly
10	Monthly (spring); Quarterly thereafter	Quarterly	Quarterly	Quarterly

8.1.1.1 Weed and Pest Control

Non-native plant control measures will include the following: (1) hand pulling, hand cutting, (2) cutting with handheld mechanical devices, and (3) application of approved herbicides. Hand removal of non-natives is the most desirable method of control and will be used within seeded areas where feasible. Weeds shall be pulled when plants are 6–12 inches tall or when they can be positively identified, and prior to the formation of seed heads.

The maintenance contractor shall coordinate with the Project Biologist to identify weeds for removal as needed. Chemical herbicide control will be used for perennial species that are difficult to control by hand pulling. Herbicide treatments must be pre-approved by the Project Biologist and applied by a licensed or certified pest control applicator. The herbicide must be approved for use in wetland areas. Application of herbicide will be suspended should precipitation be expected to occur within 24 hours of application and/or if wind exceeds 6 mile per hour.

Plant pests will be controlled utilizing Integrated Pest Management Techniques (IPM). Pests control will be performed by the Restoration Contractor using the least toxic method available, such as washing pests off of plants with a strong stream of water, utilizing insecticidal soap, or installing plant protection devices.

8.1.1.2 General Site Maintenance

Trash will be removed from the Restoration Site by the contractor on a regular basis. Trash consists of all anthropogenic materials, equipment, or debris dumped, thrown, washed, blown, and left within the Restoration Site.

Pruning or clearing of native vegetation will generally not be allowed within the Restoration Site, except as directed by the Project Biologist. Dead biomass and plant litter will not be removed and will be left in place, with the exception of the orchard debris which may become exposed where localized soil scour occurs and new braided channels are formed by flood water. Native organic biomass and leaf litter provide valuable microhabitats for benthic and terrestrial invertebrates, reptiles, small mammals, and birds. In addition, the decomposition of plant material is essential for the replenishment of soil nutrients and minerals. Fertilizers will not be used unless deemed necessary by the Project Biologist to rectify a specific nutrient deficiency.

8.1.1.3 Erosion and Sedimentation

BMPs are not anticipated to be needed after vegetation has established in the Restoration Site. However, temporary BMPs such as burlap fiber rolls, silt fence, and burlap gravel bags will be maintained as needed for proper function until the site has reached Year 3, or until the Project Biologist has deemed the BMP's unnecessary. Once the site is stabilized by native vegetation the contractor shall remove and dispose of temporary BMPs. If after year 3, there is active erosion or sedimentation within or directly adjacent to the project AND this may affect adjacent farmlands, the Project Biologist will utilize the methods and protocol set forth under the Adaptive Management section of this plan.

8.1.1.4 Fence and Signage Maintenance

The location of gates and signage, and the language for the signage are included in the grading plans. Maintenance shall include repair of project gates and signage, and replacement as needed.

8.1.2 Old Kane Springs Road Preservation Site

The preservation site will enter into long-term maintenance once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance information for this site.

9 ECOLOGICAL PERFORMANCE STANDARDS

9.1 Viking Ranch Restoration Site

The goal of this Restoration Project is to compensate for the loss of aquatic functions associated with non-wetland waters of the state that will be impacted over the life of the Expansion Project. Aquatic functions have been documented, assessed, and quantified through a CRAM assessment of the Mine Expansion Project (Appendix N).

The Jurisdictional Delineation for the United States Gypsum Company Plaster City Expansion/Modernization Project (Hernandez Environmental Services 2016) found no wetlands within the project area. On-site observations identified two types of waters of the state: alluvial washes made up of a braided channel network that supports low density creosote bush-white bursage series vegetation, and incised upland drainages occurring within bedrock and gypsum formations that support little vegetation.

Aquatic functions of the proposed waters of the state impacts are generally associated with the interaction of water flowing over unvegetated soil and rock substrate. As such, these functions are related to hydrology and the formation of fluvial features rather than vegetation with an emphasis on chemical and non-biological benefits including:

- Short- or long-term surface water storage
- Subsurface water storage
- Moderation of groundwater flow or discharge
- Dissipation of energy
- Cycling of nutrients
- Removal of elements and compounds
- Retention of particulates
- Export of organic carbon

Performance standards are used as guideposts to inform the 10-year monitoring program of the progress toward successful compensatory mitigation. Performance standards for the Restoration Site will address these functions to determine appropriate compensation for the Expansion Project impacts.

Mitigation within the Restoration Site will be achieved primarily through site grading that removes flow diversions that keep floodwater from entering areas of the Restoration Site. Re-Establishment of site hydrology will create waters of the state and associated aquatic functions to replace those lost through the Expansion Project Impacts. A reference site in the adjacent Coyote Creek wash has been identified to compare the ecological responses of the Restoration Site to ambient environmental conditions including flood frequency, fluvial micro-topographic feature formation (e.g., braided ephemeral channels, cut banks and slip faces, sandbars, etc.), sediment transport, and debris wracking. Natural recruitment of desert vegetation either from the applied seed mix or from seed and propagule transport through flood water will be assessed as an indication of normal ecological function.

Restoration maintenance will focus on control of non-native vegetation through the 10-year maintenance effort. As this is a desert setting, the vegetation within the Restoration Site is not expected to reach a high coverage by the end of the 10-year restoration period. Currently, the Restoration Site contains patchy desert vegetation. Therefore, the quality of the existing habitat will be enhanced through supplemental seed application following site grading. This will provide a net increase in vegetation functions and wildlife values. For the purposes of this Restoration project, passive revegetation through native seed establishment is appropriate.

Additionally, the Restoration Site must exhibit signs of evidence of wildlife use during the final two years of monitoring.

The Restoration Site will be monitored for a period of ten- years after restoration implementation is complete or until performance standards are achieved. A biological consultant will monitor the site on a quarterly basis to determine progress toward performance standards and appropriate and timely maintenance activities. CRAM monitoring is considered “semi-qualitative”, all other data collected will be qualitative derived from direct site observations. Interim monitoring of the adjacent approximately 47 acres (8 acres of land on the west side, 34 acres of land on the east side of the Restoration Site, and the 5 acres of berm removal on the north and east side) will be included in the monitoring program..

9.1.1 Restoration Performance Standards

Annual performance standards are provided to serve as a benchmark towards achieving the final performance standards. These interim performance targets will be used to assess the progress of the restoration project each year. Tables 12 summarizes the non-wetland waters hydrology performance Standards and Table 13 summarizes the vegetative performance standards through Year 10.

Table 12
Restoration Performance Standards for Non-Wetland Waters

Year	Evidence of Surface Hydrology Via Active Storm or Post-Storm Flow[1]	Formation of Fluvial Features[2]
1	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
2	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
3	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 1 fluvial feature[2] observed
4	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
5	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
6	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
7	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
8	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
9	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed
10	Minimum of 1 surface hydrology indicator[1] observed	Minimum of 2 fluvial features[2] observed

[1] Evidence of surface hydrology indicators include: Drift and/or organic debris, small break/texture break in bank slope, change in average sediment, mud cracks, ripples, benches, surface relief, change vegetation density between the channel and the surrounding areas, soil development, minor erosional channels, evidence of surface hydrology via active storm or post-storm flow, debris wracking, sediment deposition, organic deposition, leaf staining, and micro-channel formation.

[2] Fluvial features include: short- or long-term surface water storage, subsurface water storage, moderation of groundwater flow or discharge, dissipation of energy, cycling of nutrients, removal of elements and compounds, retention of particulates, and export of organic carbon.

9.1.1.1 Qualitative

The main goal of the restoration project is to create conditions whereby water has no topographic impediments to flow and may become part of the active floodplain in a flood event. As such, the performance standards for unvegetated stream channel establishment shall be compared to the baseline wetland delineation to determine hydrological change over time. . Observations of hydrologic conditions, hydrologic flow after storm events, and overall presence of hydrology indicators shall be documented. The presence of hydrology indicators and fluvial features will be mapped annually to present a picture of the dynamic nature of the Restoration Site by the end of the 10-year monitoring period. Observation of hydrologic indicators shall include the presence and/or absence of the following:

- Drift and/or organic debris
- Small break/texture break in bank slope,
- Change in average sediment,
- Mudcracks,
- Ripples,
- Benches,
- Surface relief,
- Change vegetation density between the channel and the surrounding areas,
- Soil development,
- Minor erosional channels,
- Evidence of surface hydrology via active storm or post-storm flow,
- Debris wracking,
- Sediment deposition,
- Organic deposition,
- Leaf staining, and
- Micro-channel formation.

While not all of these indicators may be present at least three shall be present by the end of Year 10, and hydrologic features and functions shall be similar to the reference site in terms of surface hydrology during or directly after a storm event and in terms of evidence of "quality" of hydrologic indicators.

In addition, the Restoration Site must contain some evidence of micro- and macro-topographic complexity such as pits, ponds, hummocks, bars, rills, rock or boulders, meanders, bars, braiding, secondary channels, backwaters, and terraces. Topographic complexity will provide greater flood flow modification and flood storage functions.

Channels shall have less than 10% cover by weeds species and be free of perennial invasive species. Although there will be no official success standards required for native vegetation, the relevé method shall be used to qualitatively evaluate the Restoration Site. The channels shall have less than 10% cover by weeds species, relative to the reference site and be free of perennial invasive species. All plant species present on the Restoration Site will be documented, and characterized in terms of density, life cycle, reproductive success (i.e., flowering, seed production, seedlings observed).

9.1.1.2 California Rapid Assessment Method (CRAM)

The purpose of CRAM surveys for Restoration Site is to evaluate the wetland function and value of the ephemeral drainages (washes and braided channels) and to quantify improvement of these functions and values over time. CRAM metrics will be compared to previous CRAM studies and used to inform management decisions. CRAM provides guidelines for identifying stressors that may reflect a low score. Adaptive management strategies, if necessary, will be identified, prioritized, and implemented, in part, using CRAM survey results.

CRAM scores will be used to evaluate form and function of the Restoration Site and therefore general achievement of non-wetland waters restoration requirements for compensatory mitigation. When compared to the implementation condition, the results of the Years 5 and 10 CRAM surveys should show at a minimum the following:

- Physical form and structure that are suitable for ephemeral drainage flow and conveyance,
- Development of hydrologic features within the floodplain (wash and braided channels) that provide evidence of expected function

The goal of the CRAM surveys is to achieve at the end of the 10-year mitigation and monitoring period CRAM scores that reflect the following:

- Improvement in hydrology metric score over time
- Improvement in biotic structure metric scores over time,
- No significant decline in physical structure metric score over time
- No significant decline in the CRAM scores over time
- Overall trajectory toward improved rather than degraded condition
- Overall increase in CRAM score from implementation through year 10.

9.1.1.3 Relevé Survey for Vegetative Cover Calculation

Relevé surveys are useful when sampling large areas such as desert landscapes due to wide spacing of plants and sample plots with one vegetation stand are differentiated from adjacent stands by separate plots. A total of 10 relevé plots will be qualitatively monitored as part of the revegetation effort and will be focused during the general growing season for non-native and native species woody species within the Restoration Site (generally February through May).

Table 13
Restoration Site Target Vegetation Percent Cover

Year	Native Woody Species Diversity (Percent Relative to the Reference Site[1]	Minimum Percent Native Woody Plant Cover (Relative to the Reference Site)[1,2]	Maximum Percent Total Non-Native Cover[1]	Maximum Percent Perennial Invasive and Cal-IPC Species
1	40	10	15	2
2	40	20	15	1
3	50	30	15	1
4	50	40	10	0
5	60	50	10	0
6	66	50	10	0
7	70	50	10	0
8	70	50	10	0
9	70	50	10	0
10	75	50	10	0

Cal-IPC = California Invasive Plant Council.

[1] Average of all quadrat data.

[2] In-kind natural recruitment of native vegetation through seedling germination can serve to compensate for container plant mortality.

9.1.2 Reference Site

A desktop analysis was conducted using aerial imagery to visually identify an appropriate reference site. A 4.18 acre reference site was selected within the Coyote Creek wash approximately 350 feet north of the north west corner of the Viking Ranch Restoration Site (Figure 9) The Reference Site is within the same landscape position and within the same watershed as the Restoration Site. The visual analysis identified a natural landscape of unencumbered braided channels and associated vegetation. Using the aerial imagery, the analysis also included visually estimating the woody shrubs on site and found approximately 3.46 woody shrubs per meter^2 (Table 14).

Table 14
Reference Site Woody Shrub Desktop Analysis Results

Cover Type	Total Cover (per Meter^2)	Absolute Cover	Number of Woody Shrubs	Average Area Occupied by Woody Shrub (per Meter^2)	Total Number of Shrubs (per Meter^2)
Woody Shrubs	708.84	4.19%	205	3.46	0.012
Non-woody Shrubs	8564.21	50.60%	0	N/A	N/A
Bare Ground	7651.15	45.21%	0	N/A	N/A
Total	16924.2	100%	205	3.04	0.012

Relevé will be taken within the reference site during Year 1 of the restoration program with which to compare the Restoration Site relevé results. Relative not direct comparisons to the Reference Site, will be provided in the first annual monitoring report. The reference site will be used to determine if progress of Restoration Site is consistent with response of reference site to prevailing weather and environmental conditions. The RWQCB and the CDFW must review and approve this reference sites.

9.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance and monitoring once the permanent conservation easement has been accepted by the RWQCB. Therefore, no Ecological Performance Standards are included as this mitigation area is already intact. See section 14 for the long-term maintenance and monitoring information for this site.

10 MONITORING AND REPORTING REQUIREMENTS

10.1 Viking Ranch Restoration Site

The Project biologist will perform Restoration Site monitoring during Implementation through Year 10 to ensure the restoration program requirements are adhered to, document progress toward interim and final performance standards, and that site maintenance is being adequately performed by the maintenance contractor. Monitoring will consist of qualitative monitoring, a functional assessment using the California Rapid Assessment Method (CRAM), and relevé monitoring. Annual Reporting will allow for comparisons of the Restoration Site performance from year to year which will help drive adaptive management for project success. The monitoring methods and reporting requirements for the restoration project shall be conducted as outlined below.

10.1.1 Monitoring and Reporting Schedule

Monitoring will consist of monthly qualitative site visits conducted each year during the spring months February-May and quarterly qualitative field monitoring visits thereafter; and CRAM surveys at prior to construction and at Years 5 and 10 (Table 15). Qualitative monitoring will be conducted by the Project Biologist to determine if the site is on trajectory to meet the annual performance standards. If restoration efforts fail to meet the performance standards in any given year, the Project Biologist will recommend remedial actions to bring the site into alignment with the performance standards.

Each qualitative monitoring visit will include a visual evaluation of weed species cover, native plant and seedling establishment, plant health, plant pests, plant mortality, soil moisture, trash accumulation, hydrology/erosion, and project fencing and signage. Similar monitoring will occur on the adjacent reference site. Following each site visit, the Project Biologist will generate a brief Site Observation Report indicating the condition of the site and any maintenance and/or remedial actions needed to help ensure the project meets its annual performance goals. Copies of the Site Observation Report will be provided to USG and the Restoration Contractor.

Table 15
Monitoring Schedule

Year	Qualitative Monitoring	CRAM Monitoring	Relevé and Feature Mapping	Reporting
1	Monthly (Feb-May); Quarterly June-January	Start of Year 1	Annually	As-built (Implementation), Site Observation (monthly quarterly), Annual (January)

Table 15
Monitoring Schedule

Year	Qualitative Monitoring	CRAM Monitoring	Relevé and Feature Mapping	Reporting
2	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
3	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
4	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
5	Monthly (Feb-May); Quarterly June-January	Annually	Annually	Site Observation (quarterly); Annual (January)
6	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
7	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
8	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
9	Monthly (Feb-May); Quarterly June-January	N/A	Annually	Site Observation (quarterly); Annual (January)
10	Monthly (Feb-May); Quarterly June-January	Annually	Annually	Site Observation (quarterly); Annual (January)

10.1.2 Qualitative Monitoring

Prior to implementation, the Project Biologist will establish permanent photo points at key locations to visually document progress of the Restoration Site. These photo points shall coincide with the relevé sampling areas and serve as photographic evidence for the Restoration Site. Photos will be taken at milestone events during installation and annually through the 10-year monitoring phase of the project. Additionally, photographs will be taken of any significant management issues or biological observations, including photographs of changing conditions within the Mitigation Sites. Photos from photo-documentation points and mapped locations will be included in annual reports.

Qualitative assessments will be conducted monthly for the first year and then quarterly thereafter. Monitoring visits consist of data collection conducted by the Project Biologist. Qualitative monitoring is conducted in order to determine if the site is on trajectory to meet the annual performance standards. If restoration efforts fail to meet the performance standards in any given year, the Project Biologist will recommend remedial actions to bring the site into alignment with the performance standards. While no focused wildlife surveys will be conducted, wildlife usage will be documented.

Qualitative monitoring will include documentation of the following elements:

- Visual evaluation of hydraulic functions and conditions,
- Evidence of surface hydrology via active storm or post-storm flow if present
- Number and type of hydric indicators present
- Visual estimate of weed species cover,
- Visual evaluation of native seed establishment
- Visual evaluation of health of plants,
- Plant pests,
- Estimated percentage of plant mortality,
- Number of perennial invasive species
- Trash accumulation,
- Erosion,
- Status of project fencing and signage, and
- Wildlife usage.

All qualitative monitoring elements will be included in each Site Observation Report and discussed in the Annual Reports.

10.1.3 California Rapid Assessment Method

All CRAM surveys will be conducted by trained CRAM practitioners and will follow the approved methodologies for the CRAM Episodic Riverine Module (CMWM 2013; field book version 1.0 or most current; Datasheet version 6.1 or most current). Results of the CRAM surveys will be included in the Annual Reports for Years 1, 3, and 5 and entered into the CRAM online database.

10.1.4 Relevé

The method of data collection will occur using the CDFW-CNPS Protocol for the Combined Vegetation rapid assessment and relevé field form (CNPS 2018; CDFW-CNPS 2019). The relevé method is plot-based and is generally considered a “semiquantitative” method. This methodology relies on ocular estimates of plant cover.

Data collected will be recorded on the Combined Vegetation Rapid Assessment and Relevé Field Form Field Form (see CNPS 2018). Ten plots (1000-square meter plots) will be established throughout the Restoration Site and will be compared to 3 plots established within the reference site containing like vegetation and drainage patterns. These plots will be permanently marked so that the same areas are monitored from year to year.

Relevé monitoring will begin in year three and be conducted in late spring during years 3 through 10 The results of the relevé will be documented in the annual reports and compared to the previous year.

10.1.5 Reporting

Reporting will occur upon commencement of impacts, at the completion on restoration construction, and during the 10-year monitoring period. Site observation reports and annual monitoring reports are integral in documenting Restoration Site status, progress toward interim and final performance standards, and comparisons from year to year to help drive adaptive management for project success. At the end of Year 10, the annual report shall summarize achievement of the ecological and restoration performance standards and document procedures for final sign-off/acceptance by the ACOE. If at the end of Year 10 not all of the performance standards have been met, then the final report will summarize recommendations for either continued maintenance and monitoring on the Viking Ranch Restoration Site, or implementation of contingency measures. Reporting requirements are described in further detail below.

10.1.5.1 As-Built Report

Prior to implementation, photo points will be selected, and photos of the Project site taken. These photo points will coincide with the transect sampling areas and serve as photographic evidence for the wetland restoration area.

Within 45 days of successful completion of the installation of the native container plants or hydroseed (whichever is later), the Project biologist will submit a post-installation memorandum to the City and applicable regulatory agencies documenting the completion of the grading, plant and seed installation, and weed removal of the installation phase and describing the as-built conditions of the wetland restoration area. The report will include a copy of the reduced set of construction drawings and a figure showing the final as-built limits of the wetland restoration area. Photographs will be included in the "as-built" report to document the site at the completion of the initial phase of implementation. The post-installation memorandum will include the following:

- Date(s) work within waters of the state were initiated and completed.
- Summary of compliance status for each regulatory agency permit condition.

- Color photographs (including maps of photo points) taken at the Restoration Site before and after installation work.
- One copy of the as-built drawings for the entire wetland restoration area.
- Schedule for future Restoration Site monitoring and reporting.

10.1.5.2 Site Observation Reports

Each qualitative monitoring visit will include a visual evaluation of hydraulic functions and conditions, weed species cover, native seed establishment and health, plant pests, visual estimate of plant mortality, soil moisture, trash accumulation, hydrology/erosion, and project fencing and signage. Following each site visit, the Project Biologist will generate a brief Site Observation Report indicating the condition of the site and any maintenance and/or remedial actions needed to help ensure the project meets its annual performance goals. Copies of the Site Observation Report will be provided to USG and the Restoration Contractor.

10.1.5.3 Annual Mitigation Monitoring Reports

An annual biological monitoring report summarizing the progress of the Restoration Site will be submitted to USG and regulatory agencies annually following completion of all installation work. Annual reporting will be due January 1st each year. If no As-built report was required for this restoration project, then the first annual report will include a discussion of the As-built conditions according to the grading plan and any minor changes that occurred to the grading plans were Each report will document the condition of the Restoration Site with photographs taken from the same fixed points in the same directions. Annual reports will identify any shortcomings of the restoration program and recommend remedial measures if necessary, for the successful completion of the restoration project.

All monitoring reports should include the following in the report:

- Vicinity map(s)
- Compensatory Restoration Site Map(s) (including the following information): Polygons by compensatory mitigation type as described in the approved HMMP; photo station locations; and annotated locations of sample points/transects/quadrants/soil pits/monitoring stations. Note: maps must comply with the SPD Map and Drawings Standard.
- Reference Site Map(s)
- Photographic record of the reference site, the original photos taken from the designated photo points, and the most recent photos taken for the annual monitoring visit at designated photo points.

- Results of functional/condition assessments as required to be used for the compensatory mitigation project.
- Narrative describing overall condition of the Restoration Site in comparison to the reference site, status of hydrology, hydrologic indicators, seed mix and any changes to plant species listed in this report, seed application and germination status/cover, fencing, signage, erosion, vandalism, trespassing, any additional changes made from to this plan and/or the grading plan, reason for changes occurred from the original grading plans, adaptive management strategy should it need to be implemented, conclusions of overall project status compared to the ecological and restoration performance standards.
- Original grading plans

10.2 Old Kane Springs Road Preservation Site

The Preservation Site will enter into long-term maintenance and monitoring once the permanent conservation easement has been accepted by the RWQCB. See Section 14 of this document for the long-term maintenance and monitoring information for this site.

11 ADAPTIVE MANAGEMENT PLAN

Adaptive management is defined, for the purposes of this mitigation project, as a flexible, iterative approach to the long-term management of biological resources that is directed over time by the results of ongoing monitoring activities and direct observation of environmental stressors that are producing adverse results within the Restoration Site.

An integral part of a successful compensatory mitigation project is early detection of problems determining the cause(s) of those problems and attempting to correct those problems so that the compensatory mitigation project achieves its objectives and ecological performance standards. If annual performance guidelines are not met for any given year in the 10 year restoration period and/or if the project experiences a significant unexpected problem, the project biologist will prepare an analysis of the cause(s) of failure and shall propose remedial actions in the annual report.

Adaptive management measures will include the utilization of qualitative data gathered in the field prior to and throughout the monitoring period to assess the aquatic functions and values, effects of weeding maintenance, and status of seed germination and cover within the Restoration Site. Following an event that causes damage to all or part of the Restoration Site, this data will be used in part to drive management considerations for the repair of the damaged areas. Achieving the key goals of the restoration program and establishing a naturally functioning aquatic resource will be the focus of all adaptive management decisions.

If determined necessary by, the Project Biologist in consultation with USG will notify the regulatory agencies and prepare an analysis of the project’s problem(s), and propose remedial actions to correct the problems in order to meet the performance standards and success criteria at the end of the 10- year maintenance and monitoring period. The maintenance and monitoring obligations will continue and/or alternative contingency measures and interim performance standards will be negotiated, until the resource agencies give final permit compliance/approval or approval for alternative compensation measures. Individual environmental stressors are discussed below along with an anticipated range of management responses to correct any damage that may occur to the Restoration Site.

11.1 Drought

Seasonal drought is a normal annual cycle in San Diego County, especially in low-precipitation areas like the desert. The seed mix has been designed with drought-tolerant desert plant species that are capable of withstanding seasonal fluctuations in available moisture. However, periods of extended drought could occur, including low seasonal rainfall and prolonged high temperatures that may negatively affect the Restoration Site (e.g., lower native cover, higher plant mortality, increased potential for pest infestations on site).

If drought conditions limit native vegetation development, an additional seed application may be considered to replenish the native seed bank to allow the site to respond normally in the event of renewed rainfall and/or flooding.

11.2 Adverse Hydrologic Changes

Floodplains are dynamic systems that can experience topographic modification due to flood events. It is expected that sediment will be deposited and exported from the Restoration Site during flood events. If elevations within the Restoration Site (such as excessive aggradation or degradation) change in such a way that compromise the success of the project, localized grading or recontouring may be necessary for the project to achieve success. In the event of adverse hydrologic and/or topographic changes affecting the Restoration Site, the Project Biologist will assess the conditions and provide adaptive management recommendations to the Corps including but not limited to weed free BMPs such as burlap encased straw wattles, fiber rolls or burlap gravel bags; and/or additional grading.

11.3 Fire

San Diego County experiences periodic wildfires. Vegetation communities native to the area are adapted to this periodic fire regime, with plant species possessing the ability to stump, sprout, or otherwise regenerate from underground plant material. While fire is a co-evolutionary factor, it also presents the possibility for faster-growing, early successional non-natives to out-compete the recovering native species. In the event of fire affecting the Restoration Site, the Project Biologist will assess the post-fire conditions and provide adaptive management recommendations.

12 FINANCIAL ASSURANCES

12.1 Viking Ranch Restoration Site

As owner and permittee of the Restoration Project, USG is financially responsible for implementation and management of the project. Costs include planning and design, construction, interim maintenance and monitoring, and long-term management through funding of a non-wasting endowment. USG must post a performance bond to cover the initial implementation and 10-year maintenance and monitoring activities outlined in this HMMP. The same funding source established by USG will be available in order to complete the compensatory mitigation project, provide alternative compensatory mitigation, and/or for use by a third party to complete requires tasks, should the initial restoration effort fail to be successful.

Financial Assurance in the form of two separate performance bonds will be provided to cover the cost to 1) construction and implement the Restoration Site , and 2) monitor and maintain the Restoration Site until formal acceptance by the RWQCB. In accordance with the Final 2015 Regional Compensatory Mitigation and Monitoring Guidelines for South Pacific Division USACE (ACOE 2015) each bond will contain 120 percent of the total cost for each bond.

The estimated cost to construct and implement the project is $1,309,816.00. The total implementation cost, including a 20 percent risk premium, will require a financial assurance for construction and implementation of $1,571,779.20 (Table 16). The estimated cost for monitoring and maintenance over a 10-year post-construction and implementation period is $964,940.00. The total, including a 20 percent risk premium, will require a financial assurance for maintenance and monitoring of $1,157,928.00 (Table 16).

Table 16
Construction and Implementation Costs

Item	*quantity*	*units*	*unit cost*	*extended cost*
Land Acquisition - Conservation Easement	***160***	***AC***	***2,500.00***	$170,000.00
Mobilization	1	LS	$34,000.00	$34,000.00
Water Pollution Control and BMPs	1	LS	$25,000.00	$25,000.00
Misc. Construction Items				
Staging area prep/weed-free	50,000	SF	$0.05	$2,500.00
remove existing power	1	EA	$2,200.00	$2,200.00
Remove Palm trees	6	EA	$2,500.00	$15,000.00
Map and remove sub-surface irrigation mainline system	160	AC	$350.00	$56,000.00
Mulch chipping	80	AC	$500.00	$40,000.00
Incorporate mulch	120	AC	$125.00	$15,000.00
Grade Control Structure	1	LS	$50,000.00	$50,000.00
Earthwork				
Cut	23,232	CY	$6.00	$139,392.00
Fill	23,232	CY	$6.00	$139,392.00
Berm grade and spread	40,333	CY	$4.00	$161,332.00
Planting				
Site preparation	40	AC	$1,500.00	$60,000.00
Seed Mix A -	160.00	AC	$2,500.00	$400,000.00
Subtotal				$1,309,816.00
Additional 20%				*$261,963.20*
Total				**$1,571,779.20**

Table 17
10-Year Maintenance and Monitoring Costs

Item	***quantity***	***units***	***unit cost***	***extended cost***
Maintenance - 10 years	40	Qrly Events	$20,000.00	$800,000.00
Monitoring - 10 Years	10	Annual	$16,494.00	$164,940.00
Subtotal				$964,940.00
Additional 20%				*$192,988.00*
Total				**$1,157,928.00**

Additionally, USG will provide an estimated $701,085, which includes the initial and capital costs plus the endowment (at a 3.5% capitalization rate) for the long-term management and monitoring of the property (Appendix O).

The non-wasting endowment will be provided to fund in perpetuity management of the Restoration Site. The endowment will be based on the long-term management plan (Section 14 of this report) to be fully funded by the end of the third year of the 10-year monitoring period. The endowment value will be determined through a Property Assessment Record or similar analysis of management costs and return on the investment of endowment principal to generate sufficient funds to pay for ongoing management actions.

12.2 Old Kane Springs Road Preservation Site

USG will provide an estimated $TBD, which includes the initial and capital costs plus the endowment (at a 3.5% capitalization rate) for the long-term management and monitoring of the property (Appendix O).

A non-wasting endowment will be provided to fund in perpetuity management of the Preservation Site. The endowment will be based on the long-term management plan (Section 14 of this report) to be fully funded by the end of the third year of the 10-year Viking Ranch restoration monitoring period. The endowment value will be determined through a Property Assessment Record or similar analysis of management costs and return on the investment of endowment principal to generate sufficient funds to pay for ongoing management actions.

13 COMPLETION OF MITIGATION

13.1 Viking Ranch Restoration Site

At the end of the tenth year of restoration, or at such time that the restoration site has achieved the performance standards, a notification of completion and final monitoring report will be submitted by USG to the RWQCB. The final report will include the evaluation of the success of the restoration program and make a determination of whether the requirements and performance standards criteria of the mitigation program have been achieved.

Following receipt of the notification of completion, the RWQCB may visit the Restoration Site to confirm the completion of the restoration effort and to verify compliance with the permit conditions. Written acceptance and/or concurrence from RWQCB shall be requested by the project biologist in order to signify and document completion of the restoration obligations. Upon written confirmation of the project success by the RWQCB, the agency shall release the project proponent/applicant of all obligations associated with the 10-year maintenance and monitoring program. Henceforth, the project will transition into long term management under the approved long-term management plan.

13.2 Old Kane Springs Road Preservation Site

The Preservation Site does not have an implementation maintenance and monitoring as the site is already intact. As such, there is no requirement for completion of mitigation. This site will enter directly into the long-term maintenance and monitoring phase once the permanent conservation easement has been accepted by the RWQCB. See section 14 for the long-term maintenance and monitoring information for this site.

14 LONG-TERM MANAGEMENT PLAN

14.1 Viking Ranch Restoration Site

Upon meeting the final performance standards and approval by the regulatory agencies the site will begin long-term management (in-perpetuity) by a qualified long-term natural lands manager. USG will be responsible for ensuring the long-term management of the restoration project. Prior to completion of the 10-year restoration program the proposed Restoration Site will be protected in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Restoration Site.

The overall goal of long-term management is to promote long-term viability of the Restoration Site's waters of the state and surrounding habitat. Routine monitoring and minor maintenance tasks are included herein to assure the viability of the Restoration Site in perpetuity.

14.1.1 Land Manager and Responsibilities

The initial land manager is USG. USG and subsequent designated land manager upon transfer of property to Anza-Borrego State Park, shall implement the following long-term management plan. The Anza-Borrego Foundation will hold the conservation easement, and Anza-Borrego State Park shall manage and monitor the restoration property in perpetuity to preserve its habitat and conservation values in accordance with the conservation easement and the long-term management plan. The land manager shall be responsible for providing an annual report to the signatory agencies detailing the time period covered, an itemized account of the management tasks, and total amount expended.

14.1.2 Biological Resources Requirements

While it is not anticipated that major management actions will be required during the long-term management and monitoring, an objective of this management plan is to conduct monitoring to identify any issues that arise and use adaptive management to determine what actions might be appropriate to correct any issues that may arise threatening the Restoration Site. These monitoring surveys should occur annually, with the exception of CRAM monitoring, which should occur every five years. Surveys should assess the Restoration Site's overall condition, water quality, degree of erosion, percentage of cover of exotic and/or invasive species, native plant health, cover and diversity, fire hazard, trespassing issues, and/or other aspects that may warrant management actions.

Recommendations for management and monitoring are included for several categories below. Additional categories and/or tasks may be required. The land manager for the Restoration Site shall implement the following.

14.1.2.1 California Rapid Assessment Methodology Monitoring

Objective: Monitor, conserve, and maintain the non-wetland water Restoration Site's functions and values. Identify and limit any adverse impacts to waters of the state.

Task: CRAM monitoring within the Restoration Site should be conducted at least once every five years in order to determine if conditions are changing or have the potential to change the non-wetland water functions and values within the Restoration Site. CRAM metrics will be compared to previous CRAM studies and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available.

14.1.2.2 Sensitive Species Monitoring and Management

Objective: Identify, monitor, conserve, and maintain the non-wetland water Restoration Site's sensitive species.

Task: As part of the Restoration Site monitoring, the identification, status, and any changes to sensitive species will be noted. Sensitive species may colonize the site from adjacent Anza Borrego Park, BLM land, and open spaces. Sensitive species surveys will be compared to previous surveys and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.1.2.3 Habitat Monitoring and Management

Objective: Monitor, conserve, and maintain the Restoration Site's native vegetation communities.

Task: As part of the Restoration Site monitoring, the Restoration Site's habitat will be examined for any changes, current condition, or pending needs. Any necessary tasks will be identified, prioritized and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.1.2.4 Invasive Species Monitoring and Management

Objective: Monitor and maintain control of invasive exotic weeds that diminish the site functions, values, and quality.

Tasks: As part of the Restoration Site monitoring, a qualitative assessment of potential or observed weed invasions should occur. The monitor will make recommendations to control any exotic species, particularly weeds listed by the California Invasive Plant Council as invasive. Aggressive and/or invasive species will be noted and addressed through either hand removal or selective approved herbicide applications. Surveys will be compared to previous surveys conducted in the Restoration Site and used to inform management decisions.

Additional actions to control invasive species will be evaluated and prioritized. Weed control monitoring shall be included in annual qualitative biological monitoring. Weed control will be conducted on an as needed basis as determined by the designated land manage.

14.1.3 Security, Safety, and Public Access

The Restoration Site shall have no general public access, nor any regular public or private use. Research and/or other educational programs or efforts will be allowed within the Restoration Site, but are not specifically funded or a part of this long-term management plan.

14.1.3.1 Trespass Monitoring and Management

Objective: Install and maintain access control fencing and signage. Fencing shall be installed. Signage shall be posted and maintained at the gate(s).

Task: During each site visit, the condition of fencing and signage and any evidence of trespassing shall be recorded. The location, type, and adaptive management recommendations shall be monitored annually. Any necessary tasks will be identified, prioritized, and implemented as funding becomes available.

14.1.3.2 Trash Monitoring and Management

Objective: Monitor and Manage sources of trash and/or visible pollutants in the water.

Task: During each site visit, record occurrences of trash and/or visible pollutants in the water. Record type, location, and management restoration recommendations to avoid, minimize or rectify a trash and/or pollutant impact. This task shall occur annually.

14.1.4 Reporting and Administration

Objective: Provide a report on all management tasks conducted and general site conditions to appropriate agencies at least once every five years

Task: Prepare and provide a report and any additional documentation at least once every five years to summarize site conditions and management actions. The report will make recommendations with regard to (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near-term attention (i.e., weed removal, fence repair, erosion control, trash removal), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

14.1.5 Annual Task Cost Estimates

A summary of estimated annual costs associated with the identified long-term management tasks is $21,623 and include, but are not limited to, qualitative monitoring, CRAM monitoring; maintenance, field supplies, trespass and trash monitoring, fence and signage repairs, and annual reporting. For additional information, see Appendix O.

14.1.6 Funding

The funding mechanism for the long-term management of the Restoration Site shall be a non-wasting endowment or other method approved by the agencies. The funding amount necessary shall be deemed through a Property Analysis Record (PAR; Center for Natural Lands Management 1998) or PAR equivalent cost estimation method which shall consider the ongoing funding for the perpetual long-term management, maintenance, and monitoring of the conservation easement (Appendix O). It is anticipated that the State Parks will conduct the long-term maintenance for this restoration project. Documentation verifying the endowment funds are in place must be submitted to the agencies prior to the end of the second year of the 10 year maintenance and monitoring period.

14.1.7 Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The land manager will assess task priorities and funding available to determine which tasks will be implemented. In general, tasks are prioritized in this order: (1) required by a local, state, or federal agency; (2) tasks necessary to maintain or remediate habitat quality; (3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined be the Signatory Agencies in writing.

14.1.8 Prohibitions

The following activities are prohibited with the Restoration Site:

1. Unseasonal watering which may adversely affect the conservation watershed;

2. Use of herbicides, rodenticides, pesticides, or other such chemicals without prior Agency authorization;
3. Use of off-road vehicles;
4. Grazing or surface entry for exploration or extraction of minerals;
5. Erecting of any building, billboard, or sign (except information signs associated with the Restoration Site);
6. Deposition of soil, trash, waste, or any other material; soil deposition in associated with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions is allowed;
7. Excavating or removing of soils, rock, sand, or other material; excavation or moving of soil, rock, sand, or other material in association with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions is allowed;
8. Otherwise altering the general topography except as approved with a restoration program, and/or as an adaptive management strategy in favor of promoting Restoration Site value and functions;
9. The building of roads or any other infrastructure unless otherwise approved by the Agencies;
10. Removing, destroying, or cutting of vegetation other than for the long-term management the weeding requirements.

14.1.9 Contingency Measures

Contingency measures shall be implemented by USG to address any portion of the Restoration Site that has not met the annual performance standards. Contingency measures for the restoration project may include removal of additional berm sections, re-contouring smaller sections using hand tools. The Project Biologist will prepare a contingency plan that identifies the underperforming areas and an approach to meet annual performance criteria. If recommendations deviate from the original plan, and or permits, or require modification to the original seed mix, the plan will be submitted to the regulatory agencies for review and approval as indicated under Adaptive Management.

14.1.9.1 Alternative Locations for Contingency Compensatory Mitigation

If it is decided that an alternative location is required to complete compensatory restoration requirements, then the project proponent shall coordinate with the resource agencies to locate an approved site. Alternative locations for Restoration Site may be found within the same watershed or as credits purchased from an approved off-site preservation of intact/semi intact desert habitat.

14.1.9.2 Funding

The project proponent will be responsible for providing all necessary funds to cover costs associated with any required contingency compensatory mitigation. Sufficient funds will be provided to cover the implementation of the contingency restoration plan, associated maintenance and monitoring program, and report preparation.

14.2 Old Kane Springs Road Preservation Site

The proposed Preservation Site will be protected in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire Preservation Site.

The overall goal of long-term management is to promote long-term viability of the Preservation Site's waters of the state and surrounding habitat. Routine monitoring and minor maintenance tasks are included herein to assure the viability of the Preservation Site in perpetuity.

14.2.1 Land Manager and Responsibilities

The initial land manager is USG. USG and subsequent designated land manager upon transfer of property to Anza-Borrego State Park, shall implement the following long-term management plan. The Anza-Borrego Foundation will hold the conservation easement, and Anza-Borrego State Park shall manage and monitor the preservation property in perpetuity to preserve its habitat and conservation values in accordance with the conservation easement and the long-term management plan. The land manager shall be responsible for providing an annual report to the signatory agencies detailing the time period covered, an itemized account of the management tasks, and total amount expended.

14.2.2 Biological Resources Requirements

While it is not anticipated that major management actions will be required during the long-term management and monitoring, an objective of this management plan is to conduct monitoring to identify any issues that arise and use adaptive management to determine what actions might be appropriate to correct any issues that may arise threatening the Preservation Site. These monitoring surveys should occur annually. Surveys should assess the Preservation Site's overall condition, water quality, degree of erosion, percentage of cover of exotic and/or invasive species, native plant health, cover and diversity, fire hazard, trespassing issues, and/or other aspects that may warrant management actions.

Recommendations for management and monitoring are included for several categories below. Additional categories and/or tasks may be required. The land manager for the Preservation Site shall implement the following.

14.2.2.1 Sensitive Species Monitoring and Management

Objective: Identify, monitor, conserve, and maintain the Preservation Site's sensitive species.

Task: As part of the Preservation Site monitoring, the identification, status, and any changes to sensitive species will be noted. Sensitive species may colonize the site from adjacent Anza Borrego Park, BLM land, and open spaces. Sensitive species surveys will be compared to previous surveys and used to inform management decisions. Adaptive management strategies will be identified, prioritized, and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.2.2.2 Habitat Monitoring and Management

Objective: Monitor, conserve, and maintain the Preservation Site's native vegetation communities.

Task: As part of the Preservation Site monitoring, the Preservation Site's habitat will be examined for any changes, current condition, or pending needs. Any necessary tasks will be identified, prioritized and implemented as funding becomes available. This task shall be included in annual qualitative biological monitoring.

14.2.2.3 Invasive Species Monitoring and Management

Objective: Monitor and maintain control of invasive exotic weeds that diminish the site functions, values, and quality.

Tasks: As part of the Preservation Site monitoring, a qualitative assessment of potential or observed weed invasions should occur. The monitor will make recommendations to control any exotic species, particularly weeds listed by the California Invasive Plant Council as invasive. Aggressive and/or invasive species will be noted and addressed through either hand removal or selective approved herbicide applications. Surveys will be compared to previous surveys conducted in the Preservation Site and used to inform management decisions.

Additional actions to control invasive species will be evaluated and prioritized. Weed control monitoring shall be included in annual qualitative biological monitoring. Weed control will be conducted on an as needed basis as determined by the designated land manage.

14.2.3 Security, Safety, and Public Access

The Preservation Site shall have no general public access, nor any regular public or private use. Research and/or other educational programs or efforts will be allowed within the Preservation Site, but are not specifically funded or a part of this long-term management plan.

14.2.3.1 Trespass Monitoring and Management

Objective: Install and maintain signage. Signage shall be posted and maintained at the road entry and exit.

Task: During each site visit, the condition of signage and any evidence of trespassing shall be recorded. The location, type, and adaptive management recommendations shall be monitored annually. Any necessary tasks will be identified, prioritized, and implemented as funding becomes available.

14.2.3.2 Trash Monitoring and Management

Objective: Monitor and Manage sources of trash and/or visible pollutants in the water.

Task: During each site visit, record occurrences of trash and/or visible pollutants in the water. Record type, location, and management mitigation recommendations to avoid, minimize or rectify a trash and/or pollutant impact. This task shall occur annually.

14.2.4 Reporting and Administration

Objective: Provide a report on all management tasks conducted and general site conditions to appropriate agencies at least once every five years

Task: Prepare and provide a report and any additional documentation at least once every five years to summarize site conditions and management actions. The report will make recommendations with regard to (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near-term attention (i.e., weed removal, fence repair, erosion control, trash removal), and/or (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

14.2.5 Annual Task Cost Estimates

A summary of estimated annual costs associated with the identified long-term management tasks is $XX and include, but are not limited to, qualitative monitoring, maintenance, field supplies, trespass and trash monitoring, fence and signage repairs, and annual reporting. For additional information, see Appendix O.

14.2.6 Funding

The funding mechanism for the long-term management of the Preservation Site shall be a non-wasting endowment or other method approved by the agencies. The funding amount necessary shall be deemed through a Property Analysis Record (PAR; Center for Natural Lands Management 1998) or PAR equivalent cost estimation method which shall consider the ongoing funding for the perpetual long-term management, maintenance, and monitoring of the conservation easement (Appendix O). It is anticipated that the State Parks will conduct the long-term maintenance for this mitigation project. Documentation verifying the endowment funds are in place must be submitted to the agencies prior to the end of the second year of the Viking Ranch 10-year restoration maintenance and monitoring period.

14.2.7 Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The land manager will assess task priorities and funding available to determine which tasks will be implemented. In general, tasks are prioritized in this order: (1) required by a local, state, or federal agency; (2) tasks necessary to maintain or remediate habitat quality; (3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined be the Signatory Agencies in writing.

14.2.8 Prohibitions

The following activities are prohibited with the Preservation Site:

11. Unseasonal watering which may adversely affect the conservation watershed;
12. Use of herbicides, rodenticides, pesticides, or other such chemicals without prior Agency authorization;
13. Use of off-road vehicles;
14. Grazing or surface entry for exploration or extraction of minerals;
15. Erecting of any building, billboard, or sign (except information signs associated with the Preservation Site);

16. Deposition of soil, trash, waste, or any other material; soil deposition in associated with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions is allowed;
17. Excavating or removing of soils, rock, sand, or other material; excavation or moving of soil, rock, sand, or other material in association with an approved restoration program is allowed, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions is allowed;
18. Otherwise altering the general topography except as approved with a restoration program, and/or as an adaptive management strategy in favor of promoting Preservation Site value and functions;
19. The building of roads or any other infrastructure unless otherwise approved by the Agencies;
20. Removing, destroying, or cutting of vegetation other than for the long term management the weeding requirements.

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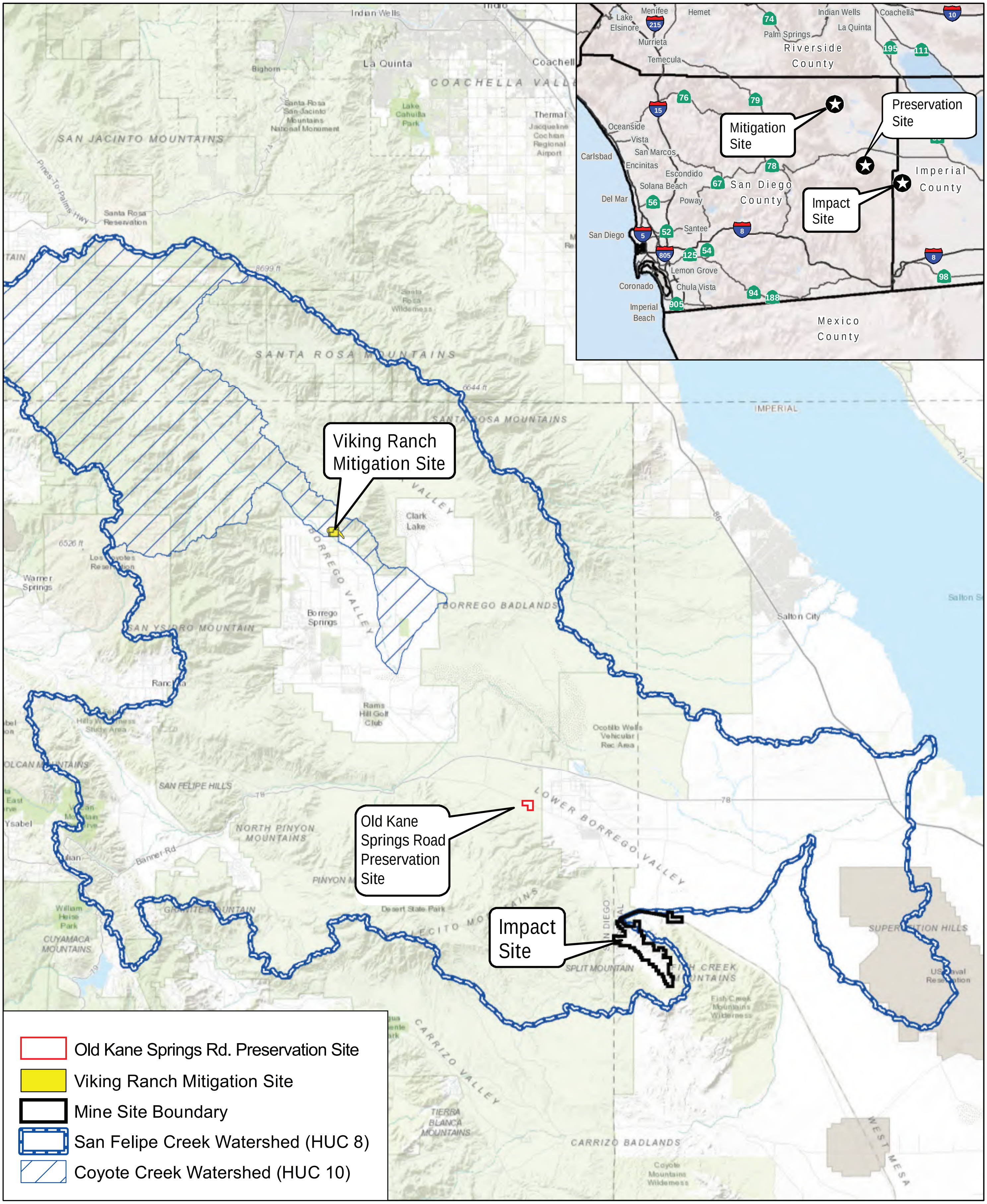
APPENDIX A

Figures



Document Path: Z:\Projects\j957101\MAPDOC\Mitigation\Viking Ranch HMMP\CDFW\C-HMMP Fig 1 Regional Vicinity.mxd

SOURCE: BASEMAP-USGS

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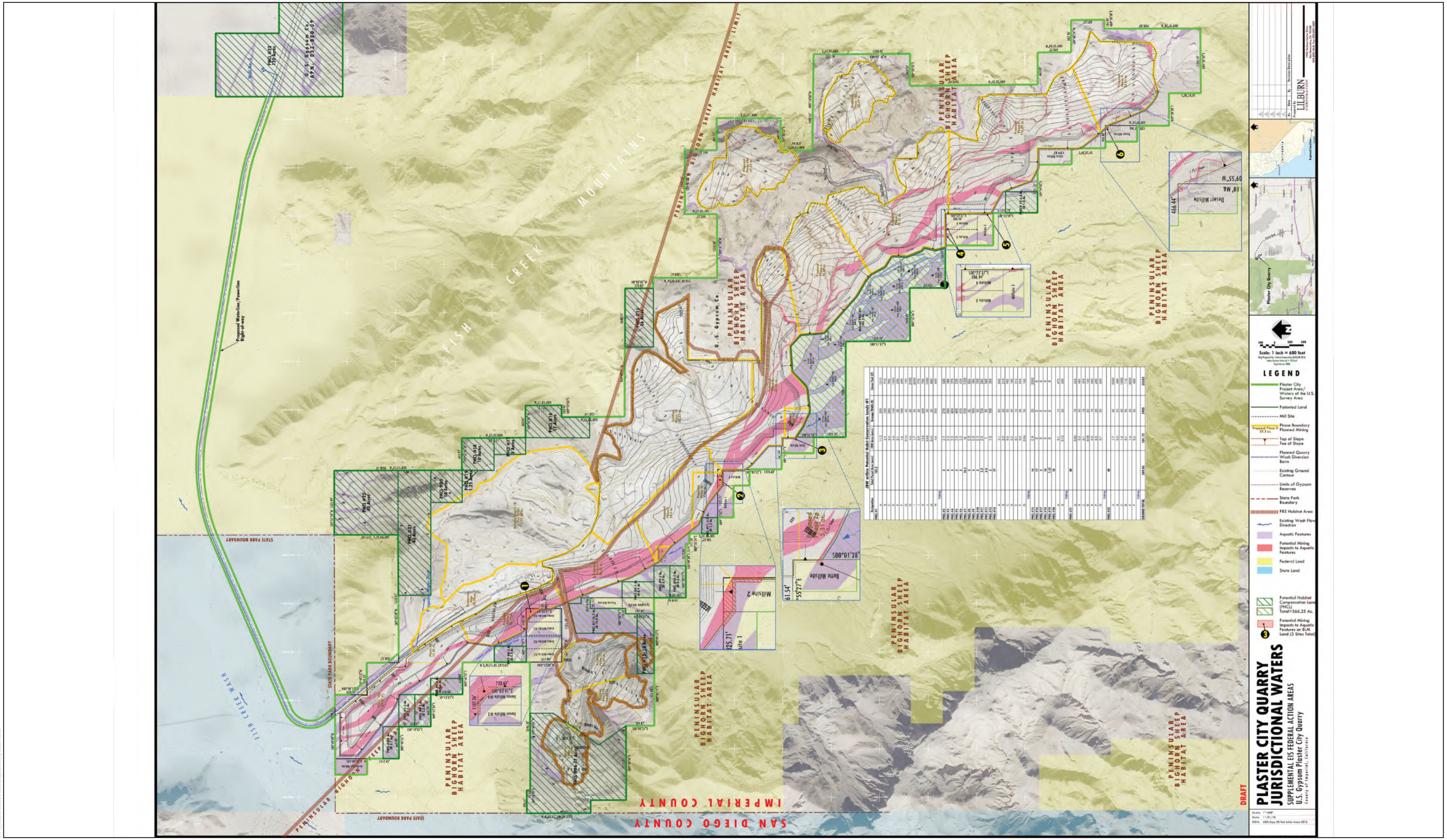
FIGURE 1

Regional Vicinity Map

Habitat Mitigation and Monitoring Plan for the
U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



SOURCE: LILBURN CORPORATION 2019

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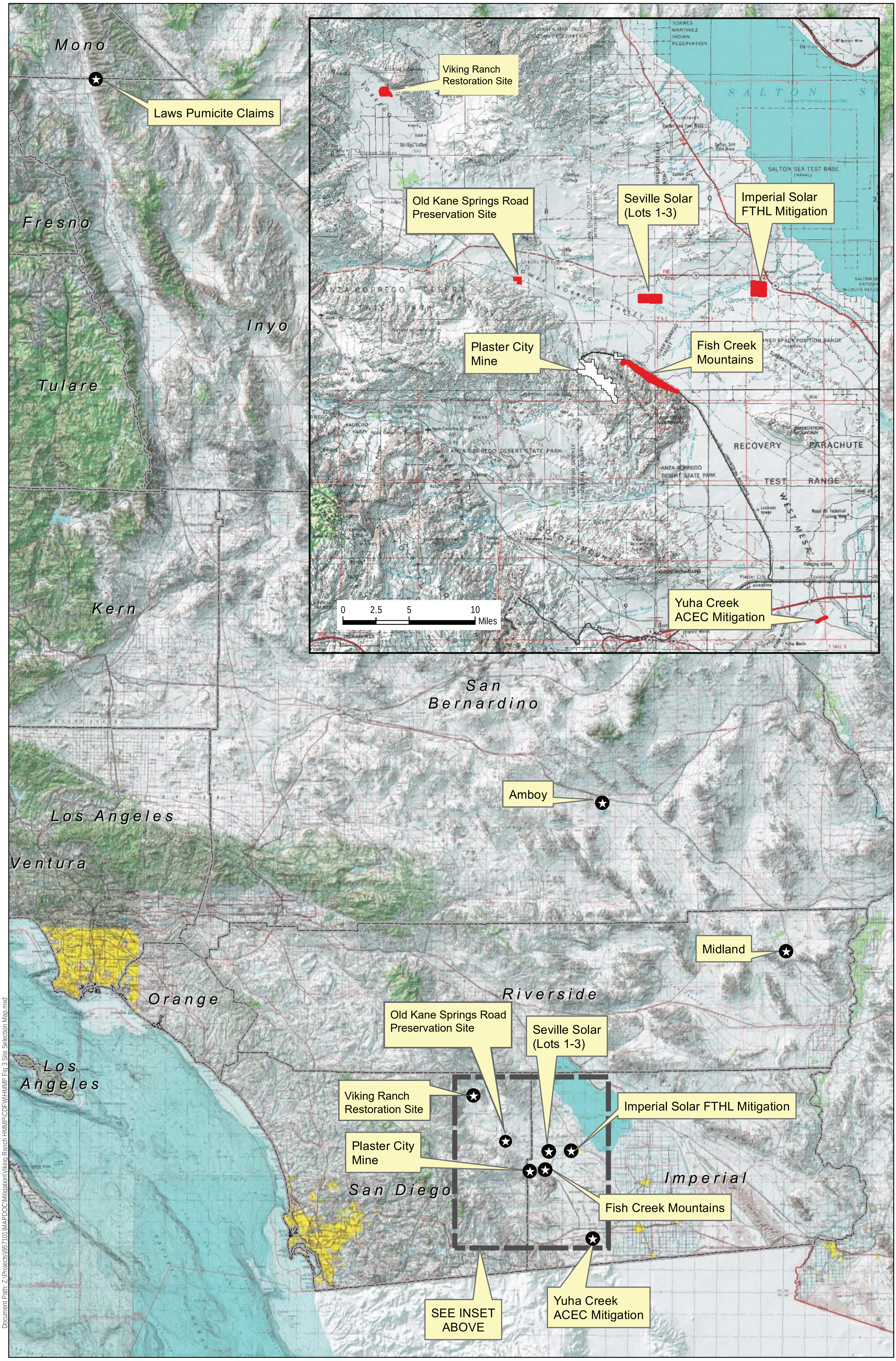
FIGURE 2

Proposed Mine Expansion Impact Map

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project

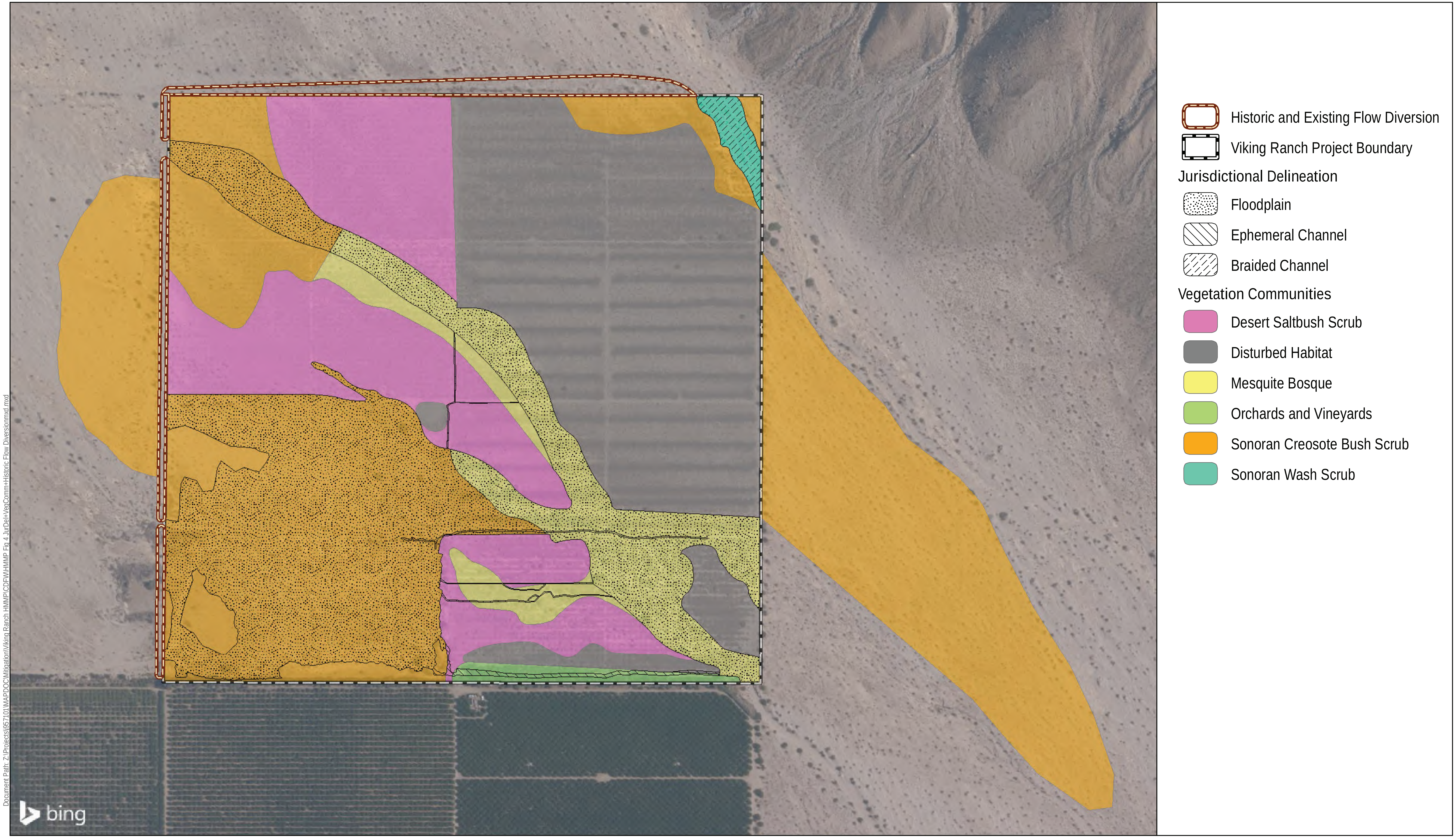


SOURCE: BASE-USGS

FIGURE 3

Site Selection Map

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



Document Path: Z:\Projects\j957101\MAPDOC\Mitigation\Viking Ranch HMMP\CDFW\HMMP Fig 4 JurDel+VegComm+Historic Flow Diversionmxd.mxd

SOURCE: AERIAL-BING MAPPING SERVICE 2018

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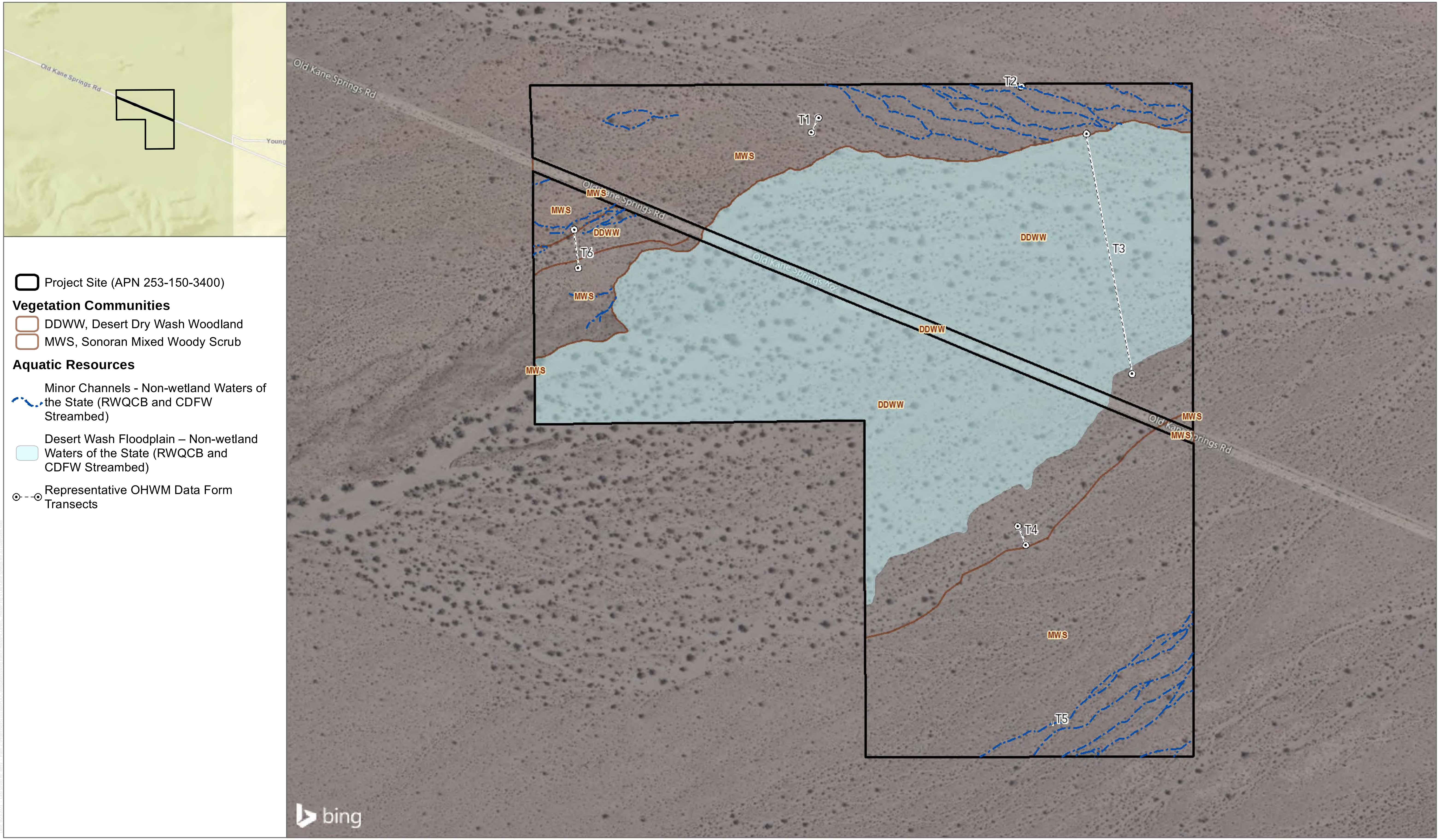
FIGURE 4

Viking Ranch Jurisdictional Delineation with Vegetation Communities and Historic/Existing Flow Diversions



SOURCE: AERIAL- BING MAPPING SERVICE 2020

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FIGURE 5

Old Kane Springs Road Jurisdictional Delineation Historic/Existing Flow Diversions

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project

SOURCE: AERIAL- BING MAPPING SERVICE 2020

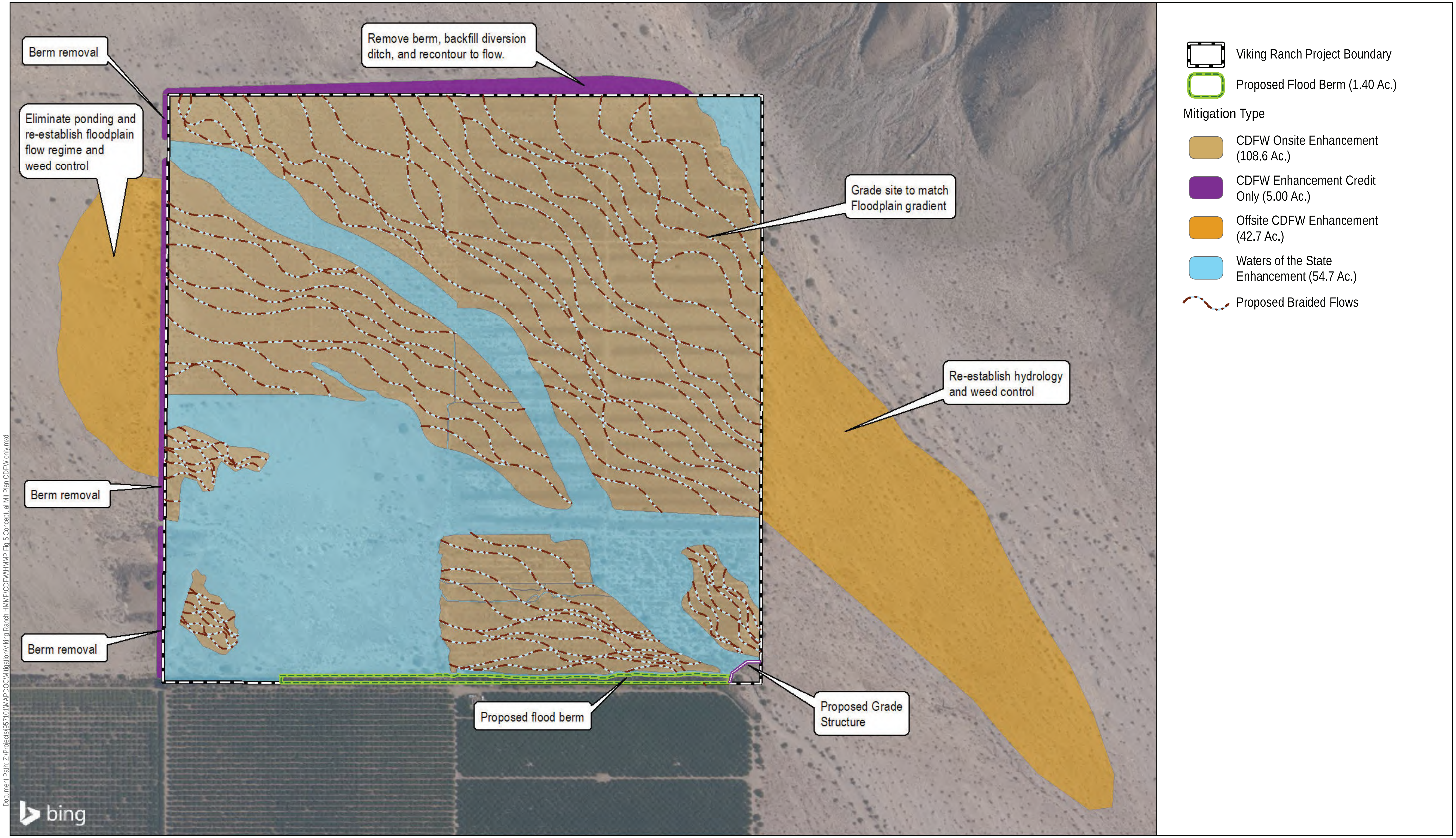
DUDEK

0 175 350 Feet

FIGURE 6

Old Kane Springs Road Vegetation Communities

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



Document Path: Z:\Projects\j957101\MAPDOC\Mitigation\Viking Ranch HMMP\CDFW\HMMP Fig 5 Conceptual Mit Plan CDFW only.mxd

SOURCE: AERIAL-BING MAPPING SERVICE 2018

0 100 200 Meters

0 200 400 800 Feet

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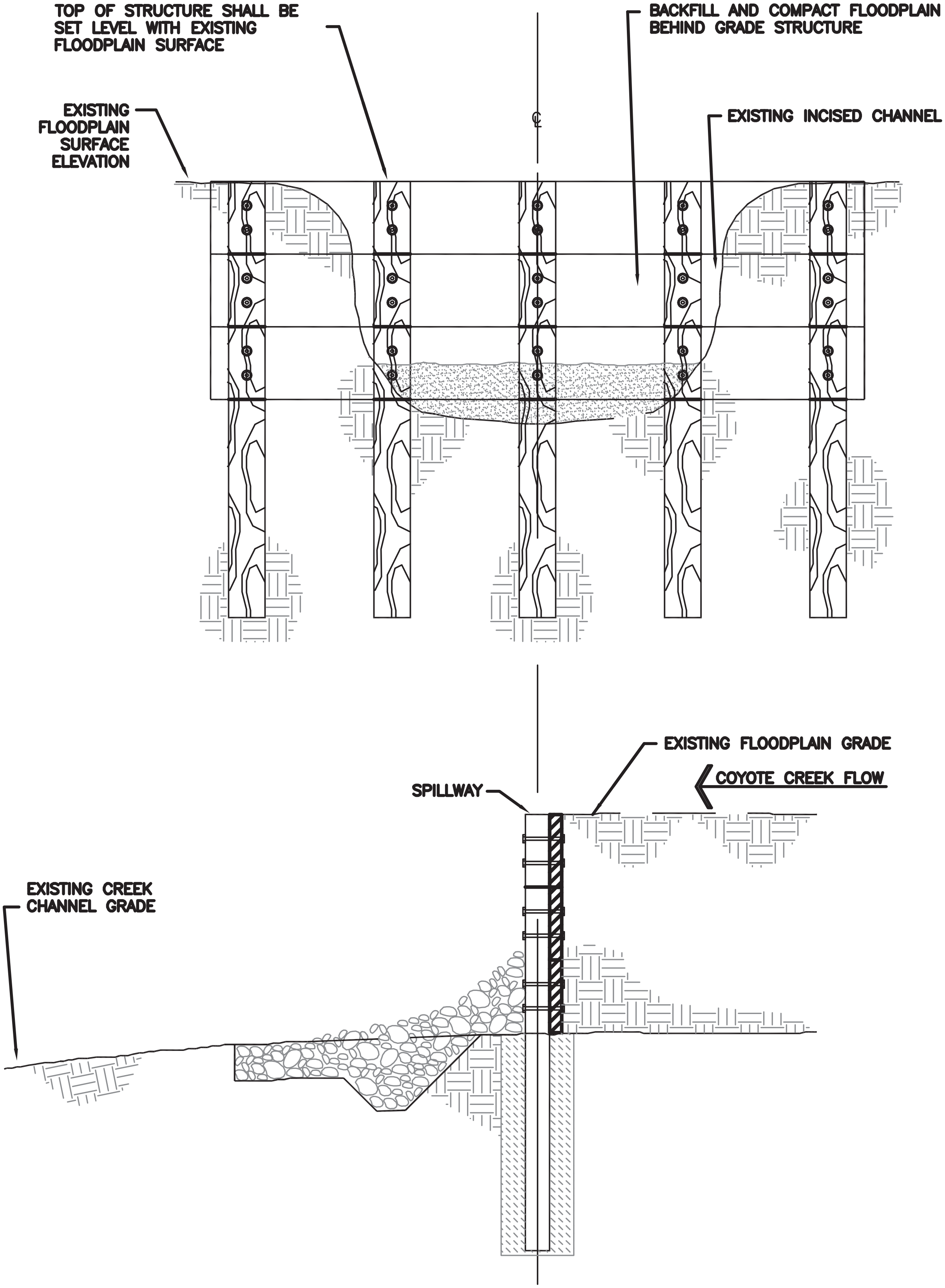
FIGURE 7

Viking Ranch Conceptual Restoration Plan

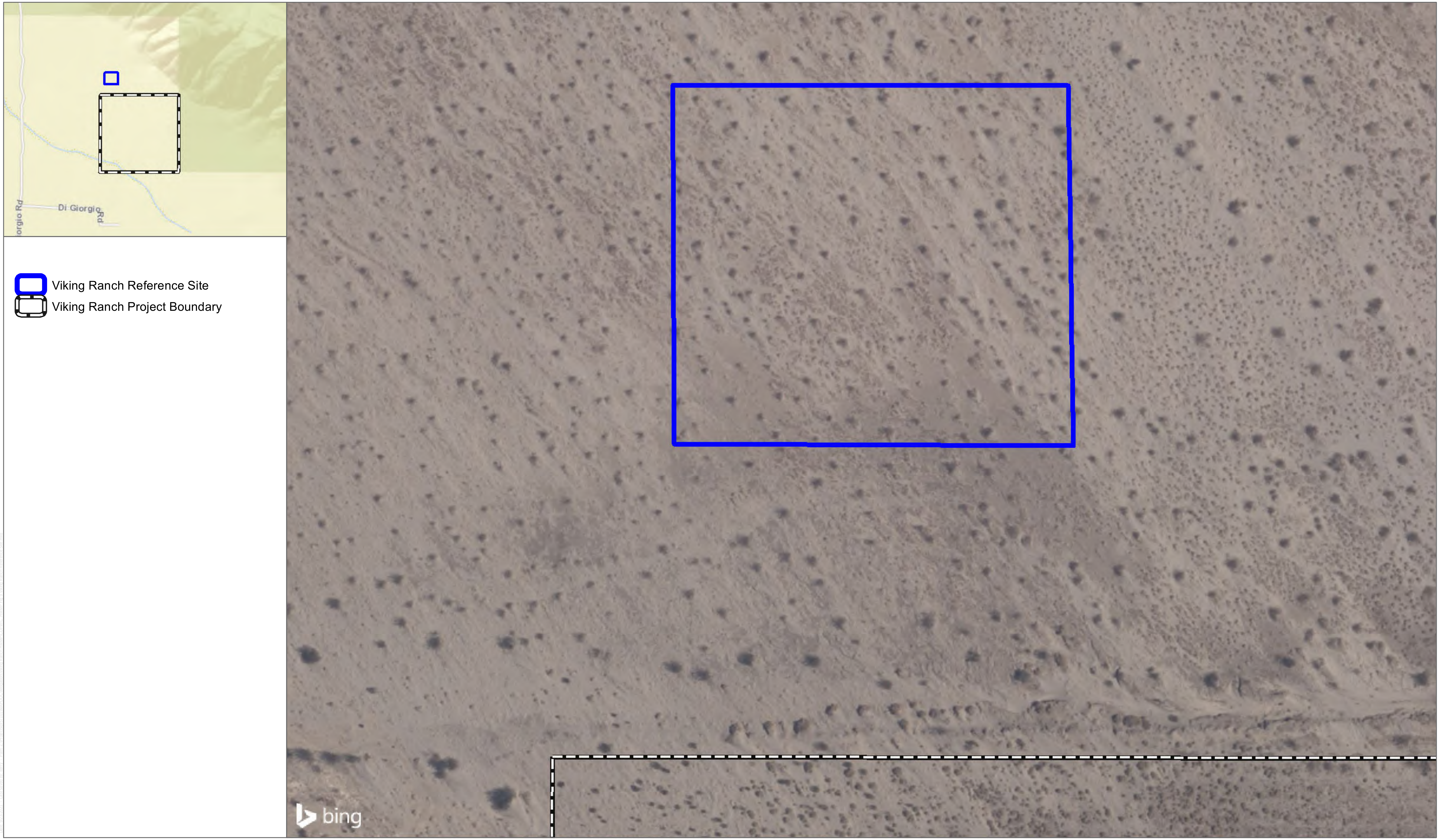


SOURCE: DUDEK 2020

FIGURE 8

Viking Ranch Typical Retaining Grade Structure Detail

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project



SOURCE: AERIAL- BING MAPPING SERVICE 2020

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FIGURE 9

Viking Ranch Reference Site

Habitat Mitigation and Monitoring Plan for the U.S. Gypsum Company Plaster City Mine Expansion and Modernization Project

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APPENDIX E:
CULTURAL RESOURCES REPORT

CULTURAL RESOURCES REPORT FOR THE US GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT SUPPLEMENTAL EIS, IMPERIAL COUNTY, CALIFORNIA

Overview of the Plaster City Quarry with Pacific Legacy Personnel William Shapiro and Mary O'Neill in the Foreground.

Prepared for

US Bureau of Land Management
El Centro Field Office
1661 S. 4th Street
El Centro CA 92243

and

US Gypsum Company
2295 Gateway Oaks Drive
Sacramento, California 95883

Prepared by

Pacific Legacy, Inc.
900 Modoc Street
Berkeley, California 94707

CWA# 3215-01

June 2018

CONFIDENTIAL

CULTURAL RESOURCES REPORT FOR THE US GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT SUPPLEMENTAL EIS, IMPERIAL COUNTY, CALIFORNIA

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Berkeley, California 94707

Project No. 3215-01

7.5-Minute USGS Topographic Maps:
Borrego Mountain SE (1958, 1959 ed.), Carrizo Mountain NE (1957, 1958 ed.),
Coyote Wells (1957, 1958 ed.), Painted Gorge (1957, 1958 ed.), and Plaster City (1957, 1958 ed.), California

June 2018

NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

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Pacific Legacy, Inc.,
900 Modoc Street, Berkeley, CA 94707

Fieldwork Personnel: William Shapiro, MA, Mary O'Neill, BA, Walter Sprague, BA, and Matthew Cappetta, BA

Report Date: June 2018

Title: Cultural Resources Report for the US Gypsum Company Expansion/Modernization Project Supplemental EIS, Imperial County, California

Prepared for: Bureau of Land Management and US Gypsum Company

Prepared by: Pacific Legacy, Inc.

Submitted to: Bureau of Land Management

Project No: 3215-01

Acreage: 1,981 acres

Keywords: Cultural resources, archaeology, Plaster City Quarry, Plaster City Plant, Imperial Valley, Colorado Desert

ACRONYMS AND ABBREVIATIONS

amsl	above mean sea level
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
BP	Before Present
CA	California
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CRHR/CR	California Register of Historical Resources/California Register
EIR/EIS	Environmental Impact Statement/Environmental Impact Report
GIS	Geographic information system
GPS	Global positioning system
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP/NR	National Register of Historic Places/National Register
OHP	Office of Historic Preservation
PRC	Public Resources Code
SCIC	South Coastal Information Center
SHPO	State Historic Preservation Officer
USACE	US Army Corps of Engineers
USC	United States Code
USG	US Gypsum Company
USGS	United States Geological Survey

MANAGEMENT SUMMARY

The United States Gypsum Company (USG) owns and operates the Plaster City Quarry and Plaster City Plant, an existing gypsum quarry and manufacturing facility located in northwestern Imperial County, California. Proposed developments to the quarry and plant were examined in the 2006 *United States Gypsum Company Expansion/Modernization Project Draft Environmental Impact Report/Environmental Impact Statement* (2006 Draft EIR/EIS) and in a Final EIR/EIS in 2008. The Imperial County Board of Supervisors, acting as the State Lead Agency under CEQA, certified the Final EIR/EIS in March 2008. The US Department of the Interior, Bureau of Land Management (BLM) served as the Federal Lead Agency for both the 2006 Draft and 2008 Final EIR/EIS, though to date no aspects of the federal actions analyzed in those documents have been implemented. No major changes to the Proposed Action analyzed in those documents are proposed, however a Supplemental EIS (SEIS) is being prepared to evaluate updated information and changes in the circumstances under which the USG Expansion/Modernization Project (the Project) is being undertaken that have occurred since the analysis for the 2006 Draft and 2008 Final EIR/EIS was completed.

As a condition of approval for the 2008 Final EIR/EIS, the Imperial County Board of Supervisors stipulated that USG contact the US Army Corps of Engineers (USACE) and pertinent regulatory agencies prior to initiating activities within the quarry that would include impacts to ephemeral drainages. After USG submitted an application for a Clean Water Act (CWA) Section 404 Permit in 2014 to expand operations within the quarry, the USACE determined that an EIS-level analysis would be required to evaluate impacts to Waters of the United States before those operations could be implemented. The USACE was not a Cooperating Agency in the development of the 2008 Final EIR/EIS and cannot adopt the Final EIR/EIS for the purposes of issuing a CWA 404 Permit. Further, the BLM did not complete Endangered Species Act consultation or issue a Record of Decision for the Final EIR/EIS. Both of these processes will be completed prior to the development of the Proposed Action on BLM-administered lands. The SEIS, which will be informed by this Cultural Resources Report (CRR) and other technical studies, will provide the Federal Lead Agency and Cooperating Agency with the opportunity to review and comment on the analysis of updated information and/or changes in circumstances related to the federal aspects of the Proposed Action as described in the 2006 Draft and 2008 Final EIR/EIS documents.

This CRR summarizes the cultural resource investigations that Pacific Legacy, Inc. has completed to date in support of the Project. These investigations included a Class I inventory or archival and records search of the Project Area of Potential Effects (APE) and a 0.25-mile area surrounding the APE as well as a Class III pedestrian inventory survey of approximately 1,464 acres and a “spot-check” survey of 517 acres to identify cultural resources that may be affected by the Project. These efforts built upon a cultural resources investigation that was completed by Pacific Legacy for the Project in 2002 in support of the 2006 Draft and 2008 Final EIR/EIS. Per BLM mandates regarding cultural resource identification efforts, areas not subject to inventory survey for over 10 years must be re-examined according to current federal standards. The 2018 cultural resources investigation was thus aimed at updating the 2002 study while examining additional areas, particularly jurisdictional waters subject to CWA 404 Permit authorization, which were not targeted during the prior inventory.

The 2018 cultural resources investigation involved the examination of all proposed mining areas and all jurisdictional waters within the Plaster City Quarry. It also included the proposed right-of-way for an approximate 3.45-mile long waterline/powerline that bridges the main quarry area and a proposed well (Well No. 3), an 8.7-mile waterline that spans facilities in Ocotillo and Plaster City, and a 5-mile alternative waterline between the Westside Main Canal and Plaster City. The right-of way for the waterline/powerline and the Ocotillo to Plaster City waterline was defined as a 50-foot buffer (100-foot corridor) centered on each alignment. The right-of way for the alternative Plaster City to Westside Main Canal waterline would be sited to the north of Highway 80 and to the south of an existing railway alignment, though the exact route has yet to be determined. Areas between the existing highway and railway alignments (695 feet distant at the widest point), were therefore examined in 2018. URS Corporation conducted a Class III pedestrian inventory survey of much of the proposed and alternative waterline routes in 2008, therefore those areas were subject to spot-check survey only to verify URS findings. A 100-foot buffer around all proposed disturbance areas on BLM lands within the Plaster City Quarry also was examined. Cumulatively, all of these areas comprised 1,981 acres and made up the Project APE. Approximately 539 acres were on BLM lands, 17 acres encompassed California State lands, and 1,425 acres were on private lands.

The Class I archival and records search revealed that 36 prior cultural resource studies have overlapped some portion of the Project APE while five additional studies have been conducted outside but within a 0.25-mile radius of the Project APE. These studies represented a wide array of cultural resource investigations, including archival and records search reviews, Class III pedestrian inventory surveys, Extended Phase I inventory survey and subsurface testing programs, cultural resource evaluation efforts, and data recovery excavations. The Class III pedestrian inventory survey conducted by Pacific Legacy in 2002, however, was the only one to encompass portions of the Plaster City Quarry. All other prior cultural resource studies overlapped or were proximate to the proposed waterline that spans Ocotillo and Plaster City and the alternative waterline between Plaster City and the Westside Main Canal.

The Class I archival and records search also revealed that 65 cultural resources have been previously documented within the Project APE while 118 resources have been recorded outside of the APE but within a surrounding 0.25-mile radius. Cultural resources documented within the Project APE include 14 prehistoric archaeological sites, 30 historic period archaeological sites or built environment resources, 11 multi-component resources containing both prehistoric and historic period elements, and 10 isolated finds. The prehistoric resources comprise mostly lithic and ceramic scatters and many of the historic period resources consist of debris scatters containing cans, glass, and metal likely associated with adjacent road or railway corridors. Fourteen of the historic period resources comprise concrete survey markers, some with associated debris or signage. Notable historic period built environment resources include Highway 80 as well as the Plaster City Quarry, Plaster City Plant, Plaster City Railroad, and San Diego and Arizona Eastern Railroad.

Pacific Legacy personnel conducted the Class III pedestrian inventory and spot-check survey of all accessible areas within the Project APE in April and May 2018. During the 2018 investigation, 879 acres were subject to an intensive Class III pedestrian inventory survey while 517 acres were examined as a part of the spot-check survey of the proposed and alternative waterline. Approximately 585 acres were inaccessible due to topographic or safety constraints. Areas subject to Class III pedestrian inventory survey included 233 acres on BLM lands, 17 acres on California State lands, and 1,214 acres on privately owned lands. Spot-check survey areas included 306 acres of BLM lands and 211 acres of private lands.

Forty-three previously recorded cultural resources were relocated within the surveyed portions of the Project APE. As documented in 2018, these included three prehistoric archaeological sites; 17 historic period archaeological sites or built environment resources; seven multi-component resources containing prehistoric and historic period materials, including one that was combined with a previously recorded prehistoric resource; and two isolated finds. Thirteen additional resources comprising historic period "C" block markers associated with Highway 80 had been previously recorded as distinct entities with unique California State Primary numbers; they were noted as unchanged during the 2018 field effort but were not re-recorded and would be more correctly characterized as features of the historic period highway. Twenty-two resources were not relocated during the 2018 field effort, including 14 archaeological sites or built environment resources and eight isolated finds. Some of these resources were likely disturbed or destroyed by erosion or development, others appeared to have been poorly mapped or mis-plotted, and still others had been mapped as just intersecting the Project APE while the materials they encompassed lay outside of the APE. With the exception of the Plaster City Quarry, Plaster City Railroad, and one historic period site, all of the previously recorded cultural resources relocated in 2018 were found along the proposed waterline between Ocotillo and Plaster City and the alternative waterline between Plaster City and the Westside Main Canal.

In addition to the 43 previously recorded cultural resources that were relocated within the surveyed portions of the Project APE, two additional prehistoric archaeological sites, 13 prehistoric isolated finds and nine historic period isolated finds were newly discovered. Nineteen of these resources, including both archaeological sites and 17 isolated finds, were noted within the Plaster City Quarry, three were found along the proposed waterline/powerline or within the area encompassing proposed Well No. 3, and two were encountered along the proposed waterline between Ocotillo and Plaster City. The two newly discovered prehistoric archaeological sites have not been evaluated for listing in the National Register of Historic Places (NRHP) and/or the California Register of Historical Resources (CRHR), and the isolated finds by definition would not qualify for listing in either register.

The Class I archival and records search revealed that 13 archaeological sites or built environment resources previously recorded within the Project APE have been evaluated for listing in the NRHP and/or the CRHR through survey-level assessments conducted in support of other projects. Of those, one has been recommended eligible for listing in the NRHP and CRHR, 10 have been recommended not eligible for listing in either register, and portions of two resources have been alternatively recommended as eligible and not eligible for listing in the NRHP and CRHR. Four additional resources reportedly required further assessment before an eligibility recommendation could be offered while the remaining resources have not been evaluated. According to available documentation, these eligibility recommendations have not been formalized by a Federal Lead Agency or the State Historic Preservation Officer. A National Register Nomination form has been prepared for one resource that includes several recorded segments that have been recommended not eligible for listing in the NHRP and/or the CRHR; this form remains under review, however, and has not been submitted to the Keeper.

Regardless of their NRHP and/or CRHR status, the BLM proposes to avoid impacts to all archaeological and built environment resources within the Project APE. A Construction Monitoring and Inadvertent Discovery Plan will be prepared prior to implementation of the Proposed Action examined under the Project SEIS. This plan will be finalized prior to the issuance of a Record of Decision and will describe the worker awareness training, avoidance measures, and monitoring procedures that will be implemented in support of the Project to protect avoid impacts to cultural resources.

CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

The United States Gypsum Company (USG) owns and operates the Plaster City Quarry and Plaster City Plant, an existing gypsum quarry and manufacturing facility located in northwestern Imperial County, California. Proposed developments to the quarry and plant were examined in the 2006 *United States Gypsum Company Expansion/Modernization Project Draft Environmental Impact Report/Environmental Impact Statement* (2006 Draft EIR/EIS) and in a Final EIR/EIS in 2008. The Imperial County Board of Supervisors, acting as the State Lead Agency under CEQA, certified the Final EIR/EIS, adopted findings of fact, a statement of overriding considerations, and a mitigation monitoring program in March 2008. The US Department of the Interior, Bureau of Land Management (BLM) served as the Federal Lead Agency for both the 2006 Draft and 2008 Final EIR/EIS, though to date no aspects of the federal actions analyzed in those documents have been implemented. No major changes to the Proposed Action analyzed in those documents are proposed, however a Supplemental EIS (SEIS) is being prepared to evaluate updated information and changes in the circumstances under which the USG Expansion/Modernization Project (the Project) is being undertaken that have occurred since the analysis for the 2006 Draft and 2008 Final EIR/EIS was completed.

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1.1 PROJECT DESCRIPTION

The Plaster City Quarry is located in the northwestern portion of Imperial County near the San Diego County border (*see* Figures 1-1 through 1-3). Approximately 2,032 acres within the quarry are owned by USG while 48 acres comprise active mill site claims on public land. To date, quarrying has occurred across roughly 437 acres (Quarry 1A, Quarry 1B, and the Shoveler Annex), with mining restricted to gypsum resources that were disturbed prior to the approval of the 2008 Conditional Use Permit issued by the Imperial County Board of Supervisors. Many of the available gypsum outcrops in these areas have been exhausted, exposing contaminants such as granite and anhydrite that are harmful to processing equipment or not useful in manufacturing. Development of future mine phases will include the removal of overlying alluvium in other parts of the quarry to expose further gypsum deposits.

Quarry development areas under the Proposed Action include approximately 73 acres of public lands as well as three new mill site claims. Two additional mill site claims are proposed along the edge of the mine plan boundary. No quarrying is proposed within the mill site claims. Instead, disturbance will be limited to activities associated with the development of a quarry top of slope and flood control berm. In addition, ongoing development of the Plaster City Quarry will impact approximately 1,119 acres of private land. This total does not include a 40-acre privately-owned inholding (Georgia Pacific Parcel) that was acquired by USG in 2006. That parcel is located within the boundaries of the quarry but has not been identified for development under the Proposed Action.

Development of the Plaster City Quarry will involve outcrop quarrying or alluvial wash quarrying. Outcrop quarrying will rely on removing gypsum from outcrops above the alluvial wash located in the central quarry area by developing and extending a series of 25-foot high benches. As quarrying extends southward, gypsum underlying alluvial overburden will be extracted through alluvial wash quarrying. Gypsum extraction will progress downward from the toe of the overburden in 25-foot vertical benches at a 1:1 slope until the bottom of the mineable zone is reached. An earthen berm measuring approximately 5 feet in height and 20 feet in width will be constructed along the west side of the quarry to preserve the natural drainage pathway to the west while protecting quarry operations to the east from floodwaters. As alluvial material is stripped during alluvial wash quarrying, a portion of that overburden will be pushed to the east bank of the wash forming a permanent retention berm intended to divert sheet flow from quarry operations in the event of storm runoff.

Historically, water used to support quarry operations has been obtained from on-site wells. Water from two wells, one drilled in 1983 (Quarry Well No. 1) and the other in 1993 (Quarry

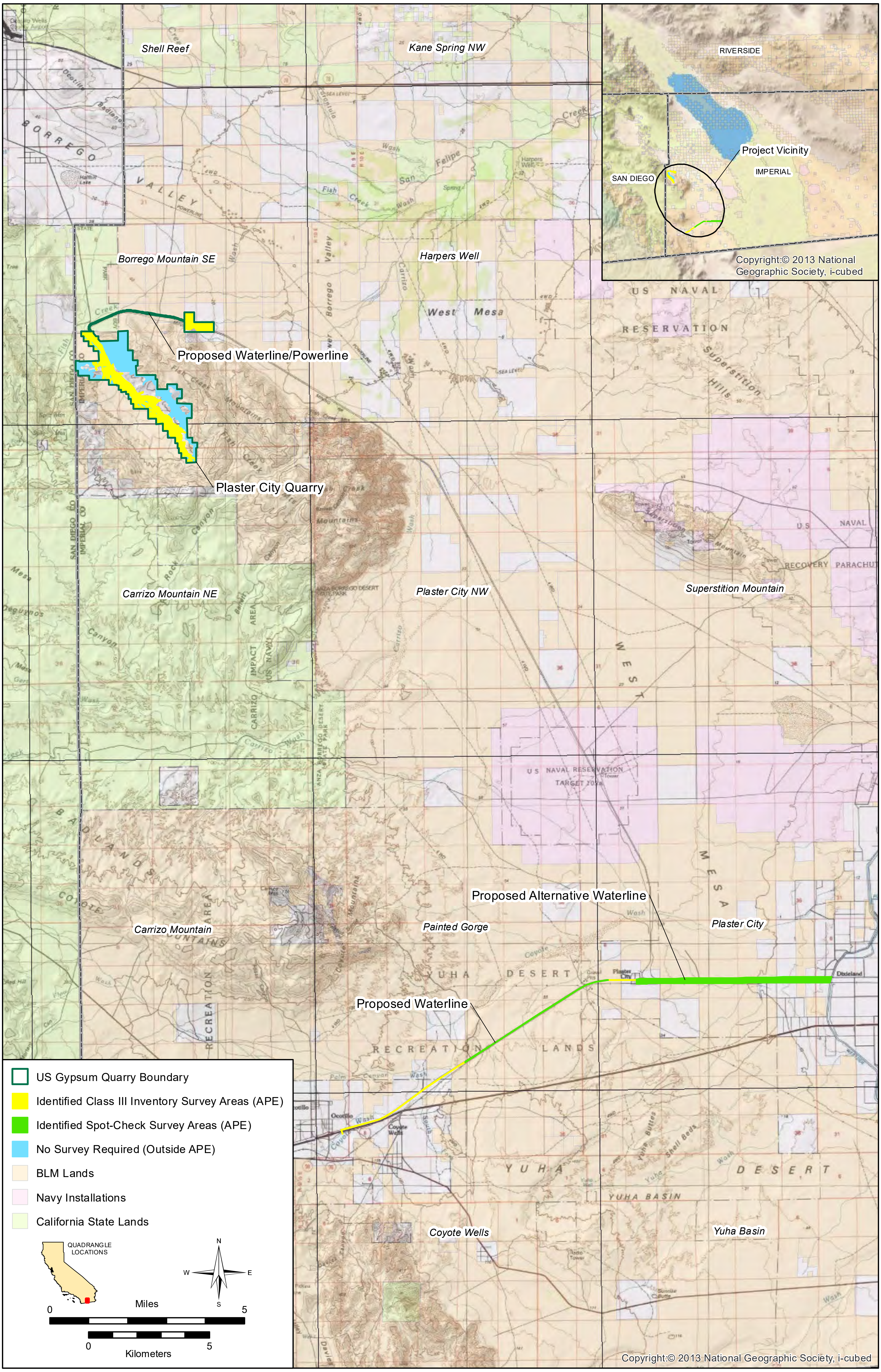

Figure 1-1. Project Vicinity Map.

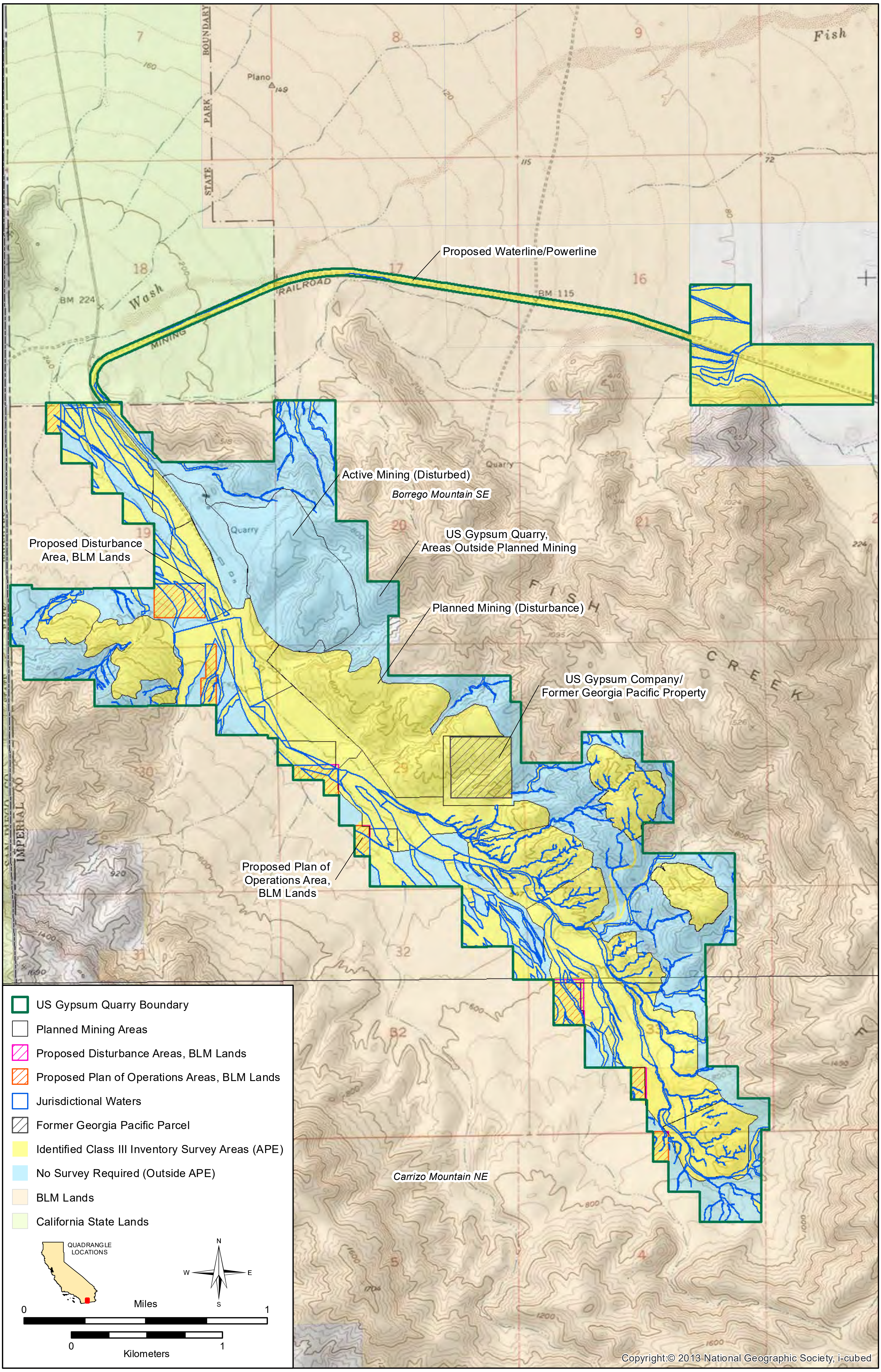

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Figure 1-2. Project Location and Area of Potential Effects Map 1 of 3.

Figure 1-3. Project Location and Area of Potential Effects Map 2 of 3.

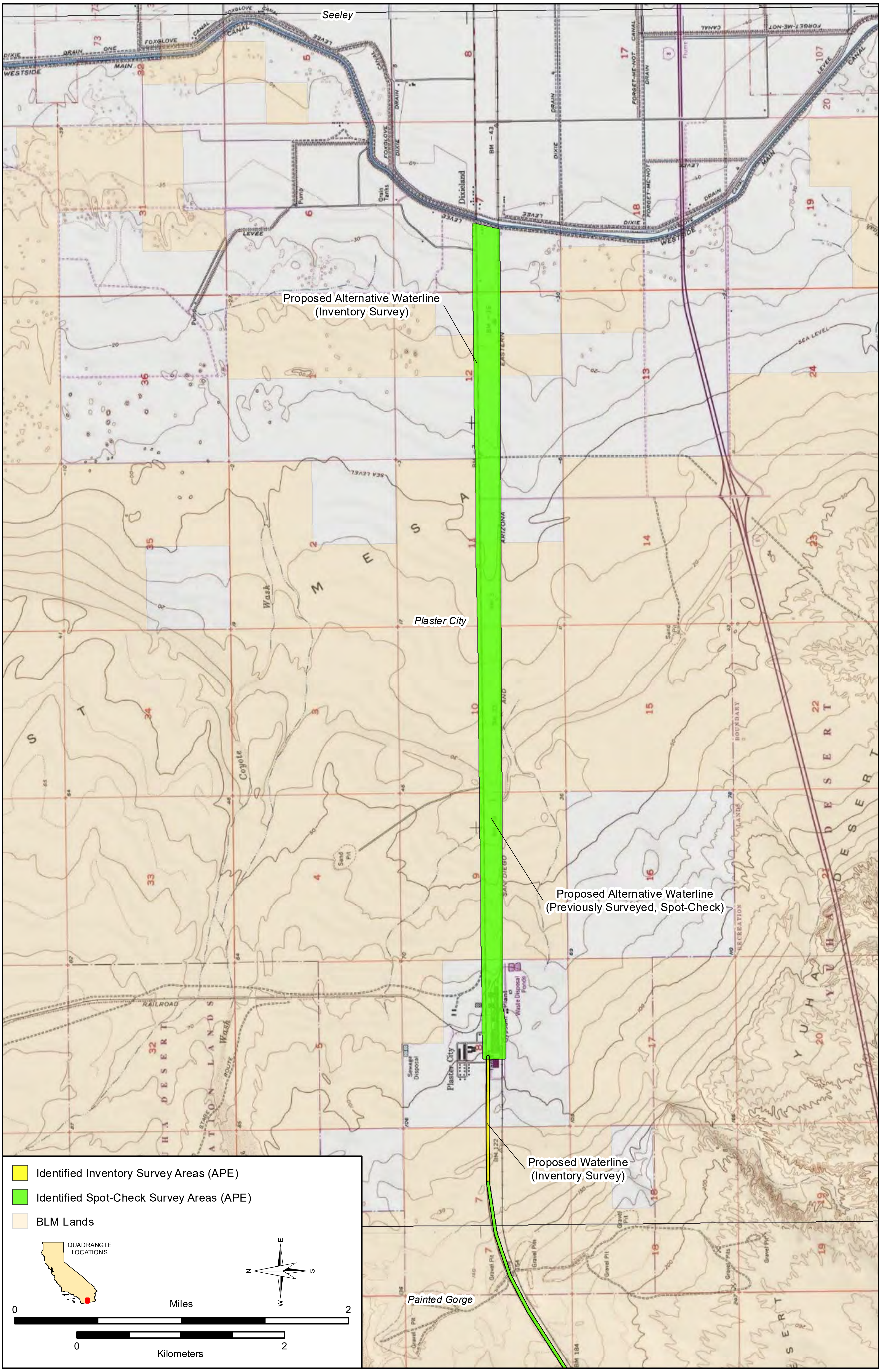

Figure 1-4. Project Location and Area of Potential Effects Map 3 of 3.

Well No. 2), supplied non-potable water for dust suppression, though the output of both wells declined over time and no longer meets operational demands. Additional water, including potable water for drinking and sanitation, is supplied by a railroad tank car from the Plaster City Plant. The Plaster City Plant spans 437 acres of private land, 340 acres of which have been developed or disturbed through plant operations. With the exception of improvements to the water system, other improvements identified under the 2006 Draft and 2008 Final EIR/EIS have been completed. Water for the plant is delivered through an 8-inch gravity fed pipeline from three groundwater wells located approximately 8.5 miles west of the plant within the Ocotillo/Coyote Wells Groundwater Basin. It is used for potable water, sanitation, fire protection, and production. Under the Proposed Action, the 8-inch diameter waterline would be replaced with a 10-inch diameter waterline bridging USG wells in Ocotillo and the plant. The 9-mile alignment occurs generally south of the present day alignment of Highway 80 and crosses private and federal lands as well as jurisdictional waters subject to CWA Section 404 authorization by the USACE. The right-of-way on BLM lands would be approximately 5 miles in length and 30 feet in width.

In addition, a new water well, Well No. 3, would be drilled on USG land east of the main entrance to the Plaster City Quarry and water would be transported to the quarry via an underground pipeline. Along with the development of this waterline, USG would install a powerline to serve the well pump that would follow the same alignment. The powerline would be underground from the well head to the quarry gate, with overhead power poles installed within the quarry boundaries. The total length of these utility alignments between the well and quarry would be approximately 3.45 miles. The proposed water pipeline and powerline would be installed parallel within the same trench between the existing Plaster City Railroad and an associated access/maintenance road. The water and pipeline right-of-way is expected to span a 30-foot wide corridor centered on a line 30 feet north of the centerline of the existing access road. The disturbance area for utilities installation would be completely within existing right-of-way and would include approximately 9,500 linear feet of public land. The utilities installation right-of-way does not cross jurisdictional waters subject to CWA Section 404 authorization from the USACE.

1.2 PROJECT LOCATION AND AREA OF POTENTIAL EFFECTS

For the purposes of this Project, the APE is defined as all proposed mining areas and all jurisdictional waters within the Plaster City Quarry. The APE also includes the proposed right-of-way for an approximate 3.45-mile long waterline/powerline that bridges the main quarry area and Well No. 3, an 8.7-mile waterline that spans facilities in Ocotillo and Plaster City, and a 5-mile alternative waterline between Plaster City and the Westside Main Canal. The right-of way for the waterline/powerline and the Ocotillo to Plaster City waterline is defined as a 50-foot buffer (100-foot corridor) centered on each alignment. For the Plaster City to Westside Main Canal alternative waterline, the proposed alignment may be sited to the north of Highway 80, to the south of an existing railway alignment, or between the highway and railway, which are approximately 695 feet distant at the widest point along the proposed alignment. A 50-foot buffer (100-foot corridor) along the proposed right-of-way north of the highway and south of the railway were joined to encompass intervening lands, which were examined in 2008 by URS Corporation (URS 2010) and therefore subject to a spot-check survey only in 2018. Although this corridor is broadly defined to offer flexibility in routing, it is expected to require only a 15-foot buffer (30-foot corridor) for construction. In addition to the areas defined above, a 100-foot buffer around all proposed disturbance areas on BLM lands within the Plaster City Quarry also is included. Cumulatively, all of these areas total 1,981 acres and make up the Project APE. Approximately 539 acres are on BLM lands, 17 acres include California State lands, and 1,425 acres are on private lands. Figures 1-2 and 1-3 depict each of the areas within the Project APE that were targeted during the 2018 cultural resources investigation.

1.3 REGULATORY SETTING

1.3.1 SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Under Section 106 of the 1966 National Historic Preservation Act (NHPA) (54 USC 300101 et seq., as amended), the BLM is required to take into consideration the effects of the proposed undertaking on historic properties. Per 36 CFR Part 800.16(l)(1) a historic property is defined as

> any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Implementing regulations for the NHPA put forth by the Advisory Council on Historic Preservation (ACHP) may be found under 36 CFR Part 800. Those regulations describe the steps that federal lead agencies must take to identify and evaluate potential historic properties, assess potential adverse effects to those properties that may occur through the implementation of an undertaking, and outline steps that may be taken to resolve potential adverse effects through avoidance or appropriate mitigation measures. Section 106 of the NHPA also affords the ACHP a reasonable opportunity to comment on federal undertakings. A main goal of the Section 106 review process is to offer interested parties an opportunity to consult and reach consensus on measures of protection for historic properties. Amendments to the NHPA (1986, 1992, and most recently in 2006) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process.

1.3.2 NATIONAL REGISTER OF HISTORIC PLACES

Criteria for determining National Register of Historic Places (NRHP) eligibility are found in 36 CFR Part 60. The NRHP is “an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation’s cultural resources and to indicate what properties should be considered for protection from destruction or impairment” (36 CFR Part 60.2). Eligibility for inclusion in the NRHP is determined by applying the following criteria, which were developed by the National Park Service in accordance with the NHPA and outlined in 36 CFR Part 60.4:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
B) That are associated with the lives of persons significant in our past; or
C) That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D) That have yielded, or may be likely to yield, information important in prehistory or history.

Any prehistoric or historic period district, site, building, structure, or object that meets one or more of the criteria above and possesses sufficient integrity may be eligible for inclusion in the NRHP as a historic property.

1.3.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT

State historic preservation regulations affecting the Project include the statutes and guidelines contained in CEQA. CEQA requires lead agencies to carefully consider the potential effects of a project on historical resources. A "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is considered historically or archaeologically significant (PRC 5020.1). Section 15064.5 of state CEQA *Guidelines* specifies criteria for evaluating the significance or importance of cultural resources as follows:

1) The resource is associated with events that have made a contribution to the broad patterns of California history;
2) The resource is associated with the lives of persons important in our past;
3) The resource embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important individual or possesses high artistic values; or
4) The resource has yielded, or may be likely to yield, important information in prehistory or history.

The technical advice series produced by the California Governor's Office of Planning and Research offers guidance on procedures to identify historical resources, evaluate their importance and potential for listing in the California Register of Historical Resources (CRHR), and estimate potential effects to historical resources. The advice series strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities including, but not limited to, museums, historical commissions, associates, and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

1.3.4 CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The CRHR, which is similar to the NRHP, is an authoritative guide that was created to identify the state's historical resources and to indicate what properties are subject to protection, to the extent prudent and feasible, from substantial adverse change. The criteria for CRHR eligibility are based upon NRHP criteria. Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined eligible for or listed in the NRHP; California Historical Landmarks, numbers 770 and above; and California Points of Historical Interest.

Per the CRHR, historical resources may consist of buildings, structures, objects, or archeological sites. Each of these entities is assessed for its historical, architectural, archaeological, cultural, or scientific importance. Per CEQA *Guidelines*, (Section 15064.5[b]), project activities may have a significant impact on the environment if they may cause a substantial adverse change in the significance of a historical resource. Activities that could result in a significant impact include demolition, replacement, substantial alteration, and/or relocation of the resource. Steps that must be implemented in order to comply with state CEQA *Guidelines* include the following:

- Identify cultural resources;
- Evaluate the significance of the cultural resources based on established thresholds of historical, architectural, archaeological, cultural, or scientific importance;
- Evaluate the effects of a project on all cultural resources; and
- Develop and implement measures to mitigate the effects of the project on significant cultural resources.

The BLM executed a national Programmatic Agreement (PA), on February 9, 2012, (Part 2) with the ACHP and the National Council of State Historic Preservation Officers (SHPOs). The PA governs the manner in which the BLM meets its responsibilities under the NHPA and directs each BLM State Director to develop a mutually agreed upon Protocol with each SHPO in their respective jurisdictions. The PA encourages BLM State Directors and SHPOs to develop mutually agreed upon BLM-SHPO protocols regulating their relationship and how consultation will take place by establishing streamlined (as opposed to case-by-case) consultations. Since California BLM administers land in California and Nevada, the Protocol was negotiated by the California State Director of the BLM with the California SHPO and the Nevada SHPO in 2014. The applicable standards for this Project are found under the *Secretary of the Interior's Guidelines for Identification* on pages 69-71 of the 2014 Protocol Agreement.

1.4 PURPOSE AND REPORT ORGANIZATION

As noted above, this report presents identification efforts that have been undertaken for the Project to date. It is intended to assist USG and the BLM by identifying previously recorded cultural resources, including known historic properties and/or historical resources, as well as cultural resources that have been newly discovered through a Class III pedestrian inventory survey of the Project APE. This document also is intended as an aid for the management of cultural resources that may be directly or indirectly impacted by the Project if avoidance measures are not implemented.

This CRR includes seven sections as well as three appendices. This section provides an introduction to the Project, including its geographic and regulatory context. Section 2.0 presents a brief overview of the Project's environmental setting, which is relevant to a discussion of the region's cultural history and to a discussion of the 2018 Class III pedestrian inventory survey. Section 3.0 outlines the cultural history of the Project vicinity from the prehistoric habitation of the region through its settlement by Euro-Americans. The results of the Class I archival and records search are presented in Section 4.0, followed in Section 5.0 by a discussion of the survey and recording methods that were used during the Class III pedestrian inventory and spot-check survey. Section 6.0 summarizes the results of Pacific Legacy's field efforts and describes the previously recorded and newly discovered cultural resources that were encountered within the Project APE. Finally, Section 7.0 outlines existing information regarding the NRHP/CRHR eligibility status of previously recorded cultural resources within the Project APE and offers recommendations for further action. Maps of previously recorded cultural resources within the Project APE are included in Appendix A, while maps depicting the findings from the 2018 Class III pedestrian inventory survey are offered in Appendix B. Full copies of confidential records for cultural resources encountered within the Project APE are included in Appendix C.

2.0 NATURAL ENVIRONMENT

The Project area's natural environment has played a large role in shaping its cultural history. The locations and characteristics of Native American habitation sites, procurement areas, and travel routes were influenced by local physiography, flora, and fauna as were later historic period settlements, infrastructural developments, and commercial enterprises. Although the Project area lies fully within the Colorado Desert, it encompasses great physiographic and biotic diversity as it stretches from the rugged eastern Peninsular Ranges to the low-lying West Mesa basin. Treatments of Colorado Desert physiography, flora, and fauna may be found in Schoenherr (1992), Munz (1963), and Lightfoot and Parrish (2009). The following discussion draws on these sources and presents a brief overview of the Project area's natural environment so that its cultural history may be better understood.

2.1 PHYSIOGRAPHY, GEOLOGY, AND SOILS

The Project area lies within the Colorado Desert, the California portion of the much larger Sonoran Desert, which encircles the Gulf of California and includes portions of Baja California, southeastern California, southwestern Arizona, and northwestern Mexico. Much of the Colorado Desert is dominated by the Salton Trough, a long valley that measures roughly 84 miles in length and 31 miles in width that is marked at its lowest point (274 feet amsl) by the Salton Sea. At the southern end of the Salton Trough, the delta of the Colorado River separates the area from the Gulf of California. The Orocopia and Chocolate mountains, uplifted by the San Andreas Fault, lie to the east of the Salton Trough. Further eastward, the Colorado Desert is punctuated by other mountain ranges, such as the Chuckwalla Mountains, before terminating at the Colorado River. The ridge formed by the Little San Bernardino, Pinto, and Eagle mountains separates the Colorado Desert and the Mojave Desert to the north. The Peninsular Ranges, which include the Laguna Mountains, lie to the west of the Colorado Desert. Low-lying mountains associated with the Peninsular Ranges dominate the western portion of Imperial County, which descends into the Imperial Valley and Salton Tough to the east. The Imperial Valley forms the northernmost extension of the Gulf of California geologic trough that extends east to the Chocolate and Cargo Muchacho Mountains and west to the Coyote and Fish Creek Mountains (Zimmerman 1981), and the Salton Sea makes up the deepest part of this basin.

The Plaster City Quarry spans an elongated valley and an unnamed wash bordered by rugged foothills at the northwest end of the Fish Creek Mountains, to the east of Split Mountain, and southwest of the Fish Creek Wash. The proposed waterline/powerline is located in the West Mesa area, which is characterized by alluvial fans emanating from the Jacumba, Coyote, and Fish Creek Mountains. The Fish Creek Mountains generally trend northwest-southeast and reach a maximum elevation of 2,330 feet amsl, though elevations within the immediate vicinity of the quarry range only from 500 to 800 feet amsl. Geologically, much of the quarry area is characterized by 100 to 200-foot thick beds of gypsum dating to the Miocene. Basal layers consist of interbeded shale, gypsum, and sandstone. In contrast, the proposed waterline/powerline is marked Quaternary alluvial deposits made up of silts, sands, and gravels that have eroded from the surrounding mountains. These deposits are very shallow near the western and northern margins of the basin but reach up to 600 feet in thickness in the vicinity of Ocotillo. The West Mesa area is marked by several fault zones, including the Elsinore Fault that separates the mesa from the Coyote Mountains and the Laguna Salada Fault that separates mostly alluvial sediments to the west (near Plaster City) from mostly Tertiary marine sediments to the east (near Ocotillo).

The Fish Creek Mountains contain the thickest, most expansive gypsum deposits in California, though they likely covered a much larger area than is currently exposed. The most extensive remnant deposits that remain are to be found in the northwest half of the Plaster City Quarry, which is the largest gypsum quarry in the country and the only one that remains active. On average, the Plaster City Plant produces one million tons of gypsum per year. While the quarry area is dominated by exposed gypsum deposits, other portions of the Project area are characterized by more varied soil series classes. For instance, soils along the water pipeline replacement alignment consist of Rositas and Superstition loamy fine sands (Zimmerman 1981). Rositas Series soils are weakly-developed, exhibiting only C-horizons. These soils form in aeolian or alluvial sands on flood plains, basins, terraces, and sand hills. Superstition Series soils form in sandy aeolian and alluvial sands on old Quaternary terraces and alluvial fans. These soils are slightly more developed than the Rositas soils and exhibit A-C horizons (Zimmerman 1981). According to US Department of Agriculture (USDA) soil survey data, soils within the Project area include Rositas, Carrizo, Orita, Aco, and Superstition series soils as well as rock outcrop (USDA-NRCS 2015). Generally, these may be characterized as follows:

- *Rositas series soils* consist of very deep, somewhat excessively drained soils formed in sandy aeolian material. Rositas soils are found on dunes and sand sheets with slopes of 0 to 30 percent.
- *Carrizo series soils* comprise very deep, excessively drained soils formed in mixed igneous alluvium; they are formed on floodplains, fan piedmonts and bolson floors and tend to occur on slopes that vary from 0 to 15 percent.
- *Orita series soils* consist of consist of very deep, well drained soils formed in alluvium from mixed sources. Orita soils occur on fan remnants and terraces with slopes of 0 to 2 percent.
- *Arco series soils* consist of very deep, well to somewhat excessively drained soils formed in mixed alluvium on terraces with slopes of 0 to 8 percent just above the floodplain.
- *Superstition series soils* consist of very deep, somewhat excessively drained soils formed in sandy aeolian deposits. Superstition soils are found on dunes with slopes of 0 to 10 percent.

The surface or near surface texture of these soils ranges from fine sand (Rositas) to gravelly sand with 70% gravel inclusions (Carrizo) to gravelly fine sandy loam (Orita) or sandy loam (USDA-NRCS 2015). As noted below, many of these soils support biotic communities that are dominated by creosote bush, burrobush, and range ratany.

2.2 CLIMATE AND HYDROLOGY

The Peninsular Ranges, which border the Colorado Desert to the west, create a rain-shadow that contributes to the desert's aridity. The Colorado Desert receives more summer precipitation that the northern deserts, though annual precipitation remains low and falls mostly between December and March with some thunderstorm precipitation in August and September. To the northwest of the Project area at Anza-Borrego Desert State Park, annual rainfall averages 6.9

inches; to the east in the City of Imperial, annual rainfall averages just 3.6 inches, much of it falling in December. Localized thunderstorms in the Colorado Desert can be especially severe, depositing 3 to 5 inches of rainfall in just a few hours (Schoenherr 1992:413).

In addition to low, unevenly distributed precipitation, the Colorado Desert is characterized by extreme temperatures, windy conditions, high light intensity, and nutrient-poor alkaline soils. It experiences greater summer daytime temperatures than higher-elevation deserts and almost never experiences frost. The City of Imperial has a recorded temperature range of 111° F (54° C), between a record high of 125° F (51° C) and a record low of 14° F (-10° C). Average low to high temperatures in the summer are 68 to 103° F (25 to 41° C) and in the winter are 38 to 69° F (4 to 20° C).

The most notable hydrologic feature in the Project vicinity is the Salton Sink. It represents the topographic low point of the Salton Trough and encompasses the Salton Sea, which is located approximately 15 miles northeast of the Project area. The Salton Sea is a shallow, endorheic rift lake fed by the New, Whitewater, and Alamo rivers as well as agricultural runoff from the Coachella and Imperial valleys (Schoenherr 1992). Currently saline, the sea is the largest water body in California. Several times in the geologically recent past, much of the Salton Trough was covered by a series of lakes known collectively as Lake Cahuilla, of which only playa surfaces, beach terraces, and the Salton Sea remain (Moratto 1980:18). Lake Cahuilla, which spanned between the Coachella Valley and the upper Gulf, formed when water from the Colorado River was diverted into the Salton Trough for extended intervals. These lacustral periods were punctuated by centuries in which the river did not flow into the region but instead deposited silt and sediments across its southern end. This cyclical filling of the trough occurred roughly every 400 to 500 years, with the latest natural episode occurring around AD 1600 to 1700.

Currently, groundwater is the most significant source water in the Project vicinity. The West Mesa area, which encompasses the proposed waterline/powerline and the Plaster City Plant, is located in the Ocotillo/Coyote Wells Groundwater Basin. The silts, sands, and gravels within the basin are highly permeable and provide groundwater to the area fed by runoff from the mountains. The Plaster City Quarry is located in the Ocotillo Valley Groundwater Basin, which also is fed by mountain runoff. In contrast to the Ocotillo/Coyote Wells Groundwater Basin, however, it is marked by surface drainages. The most prominent of these is the San Felipe Creek, which extends from the Peninsular Ranges to the Salton Sea. Near Well No. 3 of the Plaster City Quarry, the primary surface drainage is the Fish Creek Wash. Both the San Felipe Creek and Fish Creek Wash flow seasonally. The confluence of these two drainages is located approximately 10 miles to the northeast of the Plaster City Quarry near the San Felipe and Fish Creek springs.

2.3 FLORA AND FAUNA

Vegetation communities within the Colorado Desert are largely influenced by soils, latitude, and elevation (Schoenherr 1992). These habitats are dominated by shrub species, including creosote (*Larrea tridentate*), bursage or burro bush (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*) wild buckwheat (*Eriogonum fasciculatum*), ephedra (*Ephedra californica*), pygmy cedar (*Peucephulum schottii*), cataclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), and mesquite (*Prosopis glandulosa*) A variety of cactus species are also common in these habitats and include barrel cactus (*Ferocactus cylindraceus)*, cholla (*Opuntia bigelovii*), beavertail cactus (*Opuntia basilaris*), and ocotillo (*Fouquieria splendens*) (Bowers 1993). Vegetation within the Plaster City Quarry is dominated by Creosote Bush Scrub and Desert Dry Wash communities, which are evident in the wash channels and surrounding hillsides, though the quarry's gypsum outcrops are nearly devoid of vegetation, marked only by the occasional pygmy cedar. The proposed waterline/powerline passes through desert shrubland while the narrow-gauge railroad alignment is marked by creosote bush series and creosote bush-white bursage series vegetation with occasional dense areas of mesquite.

Animal species present in these habitats include big horned sheep (*Ovis canadensis californiana*), which are listed as an endangered species, coyote (*Canis latrans*), desert woodrat (*Neotoma lepida*), black-tailed jackrabbit (*Lepus californicus*), kit fox (*Vulpes macrotis arsipus*), and California ground squirrel (*Spermophilus beecheyi*). Reptiles include the Colorado Desert sidewinder (*Crotalus cerastes laterorepens*), sideblotched lizard (*Uta stansburiana*), zebra-tailed lizard (*Callisaurus draconoides*), desert horned lizard (*Phrynosoma platyrhinos)*, northern desert iguana (*Dipsosaurus dorsalis dorsalis*), and Great Basin whiptail (*Aspidoscelis tigris tigris*). Bird species include the common raven (*Corvus corax*), turkey vulture (*Cathartes aura*), American kestrel (*Falco sparverius*), red-tailed hawk (*Buteo jamaicenis*), California horned lark (*Eremophila alpestris actia*), and black-tailed gnatcatcher (*Polioptila melanura*).

3.0 CULTURAL SETTING

3.1 THE PREHISTORIC PERIOD

Beginning in the 1920s, Malcolm Rogers and Elizabeth and William Campbell conducted some of the earliest archaeological investigations in the desert regions of California. Much of Malcolm Rogers' initial work was concentrated in the Mojave Sink and Lower Colorado River region, though his later work was more wide-ranging and involved extensive surveys and limited excavations. His 1939 *Early Lithic Industries* provided a basic cultural sequence for the California desert region that was used for the next several decades. Elizabeth and William Campbell focused on the Twenty-Nine Palms area but later worked throughout much of the Mojave and Colorado deserts. In her 1931 *An Archaeological Survey of the Twenty-Nine Palms Region,* Elizabeth Campbell described whole pottery vessels and other artifacts that showed affinities to the Lower Colorado River area and much of the Colorado Desert. In a 1936 article, she used an environmental approach to examine desert region archaeological sites and presented the outlines of a basic cultural chronology. Though much of the terminology she used in her cultural sequence was never reused, the term "Pinto" and Pinto Basin culture as described by Campbell and Campbell (1935) became widely embraced. Other researchers working in the 1940s and 1950s (Rogers 1945; Schroeder 1952, 1957; Harner 1958) continued to focus on constructing chronological sequences for the California desert regions with an increasing emphasis on inter-regional variability.

Apart from early efforts by Rogers and the Campbells, the Colorado Desert remained understudied when compared to the Mojave Desert to the north, the Sonoran Desert to the east, or the mountains and coast of southern California. Spurred mostly by state and federal historic preservation laws, an increasing number of large-scale surveys and data recovery excavations began to take place in the Colorado Desert. These efforts have increased our understanding of Colorado Desert cultural history, chronology, and settlement patterns by adding to an expanding body of radiocarbon-dated archaeological contexts. Advances in lithic studies and the integration of theoretical inputs from forager theory and environmental archaeology also have contributed our knowledge about mobility, interaction, and economic practices within the region (Schaefer and Laylander 2007:247).

At least two major cultural traditions have been identified within the Colorado Desert. These include the Early Period/Archaic and the Late Period, which have been defined on the basis of general patterns in economy and material culture. The Early Period/Archaic spanned approximately 10,000 to 1,300 BP, while the Late Period began around 1,300 BP and ended with Euro-American contact. An earlier PaleoIndian Period bridging the Late Pleistocene and Early Holocene has been identified in certain parts of California, most notably in the Mojave Desert, though evidence for the human occupation of the Colorado Desert during that time has remained comparatively scarce. Rather than reflecting the absence of PaleoIndian populations, however, this relative lack of evidence may have more to do with highly mobile early settlement strategies and the nature of the landforms that make up the Salton Basin and Colorado River Valley.

3.1.1 PALEOINDIAN PERIOD

The PaleoIndian Period was marked by a transition from the cool, moist conditions of the Late Pleistocene to the warmer, more arid conditions of the Early Holocene. The PaleoIndian tradition has typically been associated with fluted point complexes identified in the Southern California desert region and beyond. They have been linked to large game hunting, including the hunting of now-extinct as well as modern species, using large fluted points associated with Clovis and Folsom assemblages. Rondeau et al. (2007) noted that over 400 fluted points have been recovered in California, though most have been discovered as isolated finds in surface contexts lacking stratigraphic, chronological, and clear functional associations. The age range of many these points has been estimated at 13,000 to 11,000 BP based on the age range of similar points recovered in the North American interior (Erlandson et al. 2007). Significantly, fluted points have been recovered from Ocotillo Wells and from the Yuha Desert (Rondeau et al. 2007).

3.1.2 EARLY PERIOD/ARCHAIC

The Early Period/Archaic includes the San Dieguito Complex and the Archaic Complex, which encompasses regional geographic expressions in coastal, inland valley or foothill, and desert settings (*see* Table 3-1). In general these archaeological complexes remain poorly defined, as do the interrelationships between them as they spanned coastal, inland valley or foothill, and desert areas (Gallegos 1987). Based on the prevalence of large points, knives, and scraping tools and the comparative paucity of milling implements in some assemblages, the San Dieguito Complex was initially associated with hunting large game. Ongoing research revealed, however, that the San Dieguito Complex was characterized by relatively mobile hunting and gathering populations who relied on a diverse range of plant and animal resources. The mobility of these early groups may have been influenced by the pluvial lake system that characterized portions of the Great Basin until roughly 11,000 to 8,000 BP.

Artifacts typically associated with Early Period/Archaic sites include crescents, scrapers, and large bifaces. San Dieguito sites in the Colorado Desert typically include cleared circles, rock rings, other rock features, and heavily patinated stone tools. Artifact assemblages attributed to the San Dieguito Complex have been recorded in Imperial County, and were subdivided by Rogers into three phases (San Dieguito I, II, and III) that were characterized by increasingly sophisticated tool kits. Although Rogers (1966) believed that the San Dieguito I, II, and III phases represented cultural progression, others have suggested that these distinctions could be ascribed to differences in site-specific activities and/or errors in sampling (Warren 1967, Schaefer 1994).

As Schaefer and Laylander (2007:247) have pointed out, much of the evidence available for San Dieguito Complex populations in the Colorado Desert still lacks solid chronological controls. Sites ascribed to the San Dieguito Complex have been identified largely on the basis of artifact morphology, the presence of heavily patinated cores or scrapers, the degree to which artifacts are embedded in desert pavement, and/or the position of sites above a now-dry washes or lakeshores; reliably dated, stratified sites have mostly remained elusive (Rogers 1966). This has impeded archaeological research on the early Holocene in the western Colorado Desert but may be largely ascribed to the geomorphic processes that have shaped the Salton Trough and the agricultural practices that have impacted the region.

Like the Early Holocene, the Middle Holocene is somewhat underrepresented in the archaeological record. Increased aridity in roughly 7,000-5,000 BP may have led to depopulation in the region, but little is known about the fluctuating lacustrine intervals of Lake Cahuilla before the later Archaic (Schaefer and Laylander 2007), and the region may have been more favorable to settlement that other desert regions such as the Mojave Desert. Indian Hill Rockshelter, located on the eastern slopes of the Peninsular Ranges, has revealed stratified deposits dating from about 4,000 BP into the Late Prehistoric. Schaefer and Laylander (2007:247) argued that the site represented a stable habitation base with floral remains suggesting a year-round human presence. Subsurface caches at the site indicating food storage were interpreted as evidence of a foraging economy in which groups returned to key habitation loci on a regular or seasonal basis.

Table 1-1. Native American Chronology of the Southern California Desert

Geologic Period	Period	Years BP	Other Designations	Material Correlates
Late Holocene	Late Period	Present 1,300	Contact / Historic Period Pre-Contact/Yuman Cuyamaca Complex (Peninsular Ranges) Patayan Complex, including Patayan I, II, and III	Seasonal resource procurement; introduction of brown and buffware ceramics; lacustrine settlement along Lake Cahuilla; groundstone; projectile points; shell ornaments; cremation burials; trail systems; obsidian from Obsidian Butte source
	Early Period/ Archaic	4,000	Archaic Period (Desert) Pauma Complex (Valley Foothills)	Milling implements, triangular projectile points, bone gorges for fishing
Middle Holocene		5,000		
Early Holocene		6,000		Dart points, leaf-shaped points or knives, corner-notched and stemmed projectile points, bone gorges
		7,000		
		8,000	San Dieguito Complex, including San Dieguito I, II, and III	Large leaf-shaped, spear, crescentric, and lanceolate points or knives; scraping tools
		9,000		

3.1.3 LATE PERIOD

During the Late Period, patterns of material cultural in the archaeological record emerged that were similar to those documented in ethnographic and ethnohistoric accounts. There was an increasing focus on the use of local resources accompanied by increasing population numbers throughout the region. Archaeological expressions typical of the Late Period include small projectile points reflecting bow and arrow technology, pottery, the use of permanent or semi-permanent village sites, the expansion of acorn milling in upland sites, the proliferation of obsidian from the Obsidian Butte source located near the southern edge of the Salton Sea, and cremation burials (Schaefer and Laylander 2007).

Within the Colorado Desert, Rogers (1945) defined Late Period cultural expressions using three chronological phases he designated as Yuman I, II, and III. Rogers' sequence has since been recharacterized as the Patayan sequence to avoid confusion between the archaeological pattern and the linguistic or cultural group. The Patayan sequence was based on chronologically distinct ceramic types (Waters 1982). Patayan I ceramic types, dating to AD 700-1000, have been identified along and to the east of the Colorado River but rarely in the western desert region.

Patayan II ceramics, dating to AD 1000 to 1500, have been found along the former shoreline of Lake Cahuilla and represented the rapid diffusion of pottery in desert contexts. Patayan III ceramics, dating to about AD 1500 or later, were marked by the addition of Colorado Buffware ceramics, which have rarely been noted along the former Lake Cahuilla shoreline but were among the most widely distributed of the Patayan types (Waters 1982). Waters reworked Rogers' Colorado Buffware ceramic typology. He gave primacy to rim form as the first step in classifying buffware types (Schaefer and Laylander 2007:252) in contrast to Schroeder (1979), who focused on temper, inclusions, and surface treatment. Both Warren and Schroeder attempted to define the geographic limits of buffware types but both relied on surface collections with little stratigraphic information or accompanying radiometric data. Some researchers continue to rely on Waters' typology while including descriptions of variants or hybrids to account for assemblage variability. Schaefer and Laylander (2007:252) have argued that despite these refinements Patayan ceramic classification schemes still allow only for broad chronological estimates or the ascription of manufacturing regions.

Critical to an understanding of the Late Period within the western Colorado Desert and along the eastern slopes of the Peninsular Ranges is an awareness of the environmental processes that were occurring during that time. Waters (1983) posited that the Salton Trough witnessed four major lacustrine episodes between 1,200 and 400 BP. A partial fifth refilling of the Salton Trough also was proposed based on fish bones recovered from a site in southeastern Imperial County that demonstrated recharge from the Colorado River (Schaefer 1994). Laylander (1997) also modeled fluctuations of Lake Cahuilla by analyzing radiocarbon dates and early historic period records. He identified at least three distinct cycles of inundation and desiccation between AD 1200 and the late 1600s when it receded for the last time. A Late Archaic phase also has been established from investigations at sites on the northern end of Lake Cahuilla (Love and Dahdul 2002; Schaefer and Laylander 2007:250).

The final retreat of Lake Cahuilla has been documented archaeologically through numerous Late Period sites along descending shorelines. These sites included "fish camps" containing fish traps and abundant fish bones along recessional shorelines as well as slab-lined house pits representing short-term as well as more sustained occupation (Schaefer and Laylander 2007:250). Wilke (1978) noted that occupants of the Lake Cahuilla shoreline accessed a wide range of lacustrine resources, including Colorado River fish species, mussels, aquatic birds, grasses, bulrush, honey mesquite, lagomorphs, rodents, and desert tortoises. He posited that the sites in his study represented permanent or year-round residential bases but acknowledged that other site types likely existed along the Late Period shoreline. In contrast, Weide (1973) argued that year-round habitation was unlikely and that occupation probably occurred on a temporary, seasonal basis. While Wilke's findings indicated major outward migration following the final desiccation of the lake, Weide's model suggested that it merely caused a shift in seasonal movement and procurement. Using Late Period data derived from the Indian Hill Rockshelter and Superstition Mountain, Schaefer (1994) appeared to side with Weide in arguing that the Lake Cahuilla shoreline was likely used for short-term, temporary camps as a part of a seasonal round. Sutton (1998) further supported that hypothesis using data on plant and animal species derived from coprolites recovered at three Late Period sites along the Lake Cahuilla shoreline, including two that were investigated by Wilke. He determined that the three sites examined in his study were not occupied during the winter months and argued that large habitation sites represented spring/summer occupation while smaller habitation sites represented a wintertime adaptation.

Schaefer and Laylander (2007:254) emphasized that the high level of mobility that seemed to characterize many Patayan settlement and subsistence practices was an important factor in promoting cross-cultural integration and interaction through time. Through the study of the spatial distribution of site types, rock art, shell, obsidian sources, and other indicators, they argued that interactions between mobile Patayan hunter-gatherers and sedentary mixed-horticultural peoples are becoming better understood. Ethnohistoric accounts have documented extensive trade networks spanning from the Pacific coast to the California-Arizona and California-Mexico borders. Archaeological evidence for intra and inter-regional movement or trade has been noted through the distribution of obsidian materials from Obsidian Butte south of the Salton Sea and from San Felipe in Baja, California. Desert manufactured ceramics have been discovered in coastal contexts, and Pacific coast and Gulf of California shell ornaments and shellfish species have been recorded at Colorado Desert sites (Schaefer and Laylander 2007:255). A protohistoric Lake Cahuilla site (CA-IMP-6427) in western Imperial County revealed shell debitage that represented the local manufacture of *Olivella* beads and other shell artifacts. A focus on trade, movement through the landscape via trails, and symbolic practices interpreted through cairns, geoglyphs, and other features within the western Colorado Desert has received increasing attention from archaeologists in recent years and continues to be a promising avenue of further research (Schaefer and Laylander 2007:254).

3.2 THE ETHNOGRAPHIC PERIOD

Kumeyaay inhabit the area currently encompassed by western Imperial County, and comprise groups formerly identified as Tipai and Ipai (Carrico 1983; Cline 1979; Hedges 1975; Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991). Kumeyaay territory extends east nearly to Yuma, Arizona, southwest to Todos Santos Bay, west to the Pacific Ocean, and northwest to the San Luis Rey River and San Felipe Creek. Quechan, Cahuilla, and Cocopah border Kumeyaay territory to the east, north, and south respectively.

The Kumeyaay language, formerly known as Diegueño, is part of the Hokan stock of the Yuman language family (Langdon 1990). The Kumeyaay were organized into autonomous tribelets under the control of a chief (*kwaaypaay*) who had at least one assistant (Ladastida and Caldeira 1995; Luomala 1978; and Shipek 1991). The position of chief was inherited from father to eldest son. The chief directed ceremonies and resolved differences within the group. Kroeber (1925:712) suggests that Tipai and Ipai populations numbered approximately 3,000 at the time of contact, circa 1770–1790. Subsequent to contact, the Native American population decreased, and in 1821 Mission San Diego records document a population of 1,711, which would have included Kumeyaay (Luomala 1978).

Kumeyaay relied heavily on seasonally available vegetal foods on valley floors and in the foothills and mountains (Ladastida and Caldeira 1995). In the spring, blossoms and buds were collected from blooming plants in the foothills. During the summer, cactus fruits, agave, and mesquite pods were collected in valleys. Small animals were hunted during both seasons. During the fall and winter months, Kumeyaay moved into the mountains seeking shelter and food. Rockshelters and overhangs provided shelter from winter rain and snow, and acorns, pinyon nuts, and small game provided food.

Kumeyaay material culture includes: seed processing implements such as the mortar and pestle and milling stones; baskets which were used for seed winnowing and storage; plain and decorated reddish-brown ceramic vessels were used for both cooking and storing water; and the bow and arrow (Ladastida and Caldeira 1995). Structures built by the Kumeyaay varied in form depending on the season. For example, summer residential structures often consisted only of a windbreak while winter residential structures were semi-subterranean pit houses with a tie-pole framework and brush thatch. Kumeyaay also built ceremonial structures, such as rock-supported brush fence circles, for events such as harvest dances (Luomala 1978 and Shipek 1991).

Kumeyaay primarily engaged in intra-group trade but did involve neighboring groups in certain trading activities. For example, coastal groups traded salt, dried fish, and abalone shells with interior valley groups for gourds, acorns, agave, and mesquite pods. Kumeyaay also traded for granite to manufacture mortar and pestles, and Quechans traded with the Kumeyaay for acorns and acorn flour (Luomala 1978 and Shipek 1991).

3.3 THE HISTORIC PERIOD

3.3.1 SPANISH PERIOD (1540-1821)

Spanish exploration of the northern Sonoran Desert region of New Spain (Southern California) began in the 1500s. The Hernando de Alarcón expedition was possibly the first European expedition to enter Alta California when it reached the mouth of the Río del Tizon (Colorado River) in 1540 (Hoover et al. 1990:103). The expedition was also likely the first to encounter the local Quechan (Yuma) Indians there. Spanish exploration of the area continued into the eighteenth century, with notable expeditions led by Melchior Diaz (1540), Father Eusebio Kino (1700), and Father Francisco Garcés (1771) (Hoover et al. 1990:103-104).

Spanish interest in Alta California intensified in the 1760s with rumors that Russia was planning to expand their colonial sphere southward from Alaska into California. In response, the Spanish government sent Father Junípero Serra and Spanish settlers northward from Mexico. In 1769, Mission San Diego and the first *presidio* were established. This success was followed by a string of settlements, *presidios*, and missions that began in the south and extended north to Mission San Francisco Solano in Sonoma County by 1823 (Hoover et al. 1990).

In 1774, Juan Bautista de Anza volunteered to find an overland trail to connect Spanish settlements in Sonora, Mexico with the new missions on the California Coast (Beck and Haase 1974). Proceeding northward from near the current US and Mexico border, de Anza and his party used the Yuha Well or *Santa Rosa de las Lajas*, located roughly 6 miles southwest of Plaster City, on March 8, 1774 (Hoover et al. 1990). In 1775, three divisions of Anza’s colonizing expedition used the Yuha Well as the first good watering locale on the way from Sonora to San Francisco. The Yuha Well is listed at California Historical Landmark #1008. Another stopping point on de Anza’s journey was Camp #48, which is now an off-highway vehicle area near Plaster City. The de Anza expedition also camped near the current Harper’s Well at the base of the Fish Creek Mountains to the northeast of the Project area during their desert crossing (Hoover et al. 1990:104).

Juan Bautista de Anza explored several possible routes, though he was not completely successful in his attempt to identify a practical trail across the southern California deserts. Nevertheless, the Spanish used de Anza's trail and established two missions, Misión de La Purísima Concepción and Misión San Pedro y San Pablo, along it in 1780. Conflict between the Spanish and the local Native American community ensued, and Yuma Indians dissatisfied with their treatment by the Spanish destroyed the two missions and killed 100 people in 1781 (Hoover et al. 1990:104, 105-106). Due to lack of water and hostile Native residents, the Spanish were unsuccessful in establishing permanent settlements in the area and the Anza Trail became a dangerous alternative to travel by sea. The overland route was closed for the remainder of the Spanish Period (Hoover et al. 1990:106). Regardless of the failure of the Spanish to establish missions or settlements in the area, the Anza Trail eventually became a well-traveled route across what is now Imperial County.

3.3.2 MEXICAN PERIOD (1821-1848)

By the early nineteenth century, Spain's empire and world influence were in decline. In 1821, there were uprisings in Florida and Texas, and Augustin de Iturbide led a successful rebellion in Mexico City. In August 1821, Mexico gained its independence from Spain with the Treaty of Córdoba. In the following year, California was declared a territory of the Mexican republic. During this period, there was little successful development in the northern Sonoran Desert region of the new colony.

In 1822, the Mexican government attempted to reopen the overland road between Mexico and California by establishing a fort to protect travelers. In 1825, Lt. Romualdo Pacheco and his troops built an adobe fort on the west bank of the current New River to the northwest of El Centro and east of the Project area. A year later, the Kumeyaay Native peoples attacked the fort and killed three of the soldiers, which resulted in abandonment of the fort. Pacheco and his soldiers returned to San Diego (Hoover et al. 1990:106). After the failure of the fort, the Mexican government took scant notice of the region except to chase occasional Yuma horse thieves through the desert (URS 2010:2-28).

In the 1834, the missions were secularized and mission lands were granted as numerous *ranchos* (Hoover et al. 1990). Since there were no mission lands to secularize in the northern Sonoran Desert region, this administrative change had no effect on the region. In the 1840s, relations between Mexico and the United States became strained as the United States expanded westward toward the Pacific Ocean. These political stresses erupted in the Mexican-American War (1846–1848), which led to the end of Mexican Period control in Alta California and its other frontier colonies north of Mexico.

3.3.3 AMERICAN PERIOD (1848-PRESENT)

In 1846, leading up to the end of the Mexican-American War, the United States Army took control of the Presidio of San Francisco and the Monterey harbor to establish a strategic location for the coastal defense of its new territory (Alley et al. 1994:8-23; Horne 2007:35). At the close of the war in 1848, Alta California became part of the United States with the signing of the Treaty of Guadalupe Hidalgo. As the Mexican-American War ended, James Marshall discovered gold on the American River while surveying a prospective sawmill site and announced the find at Sutter's Fort. The 1848 discovery brought tens of thousands of gold seekers from all over the world to California. The discovery of gold short-circuited the usual territory phase and California became a state in 1850.

Euro-American contact with Native Americans across the southern California deserts became more frequent as gold seekers passed through the region in 1848 and 1849. The route they took was the Emigrant Trail, as the Spanish Anza Trail became known. In 1852, due to numerous hostile confrontations between Euro-Americans and Native Americans in the area, the military fortification of Fort Yuma was constructed near the Yuma Crossing of the Colorado River and the site of Misión de La Purísima Concepción (Hoover et al. 1990:106). The rediscovery of gold, which was originally discovered by Spanish prospectors in the 1700s near Julian, Banner Grade, and in the Cargo Muchacho Mountains in the 1870s-1890s, caused the Euro-American population to expand in the northern Sonoran Desert region and also fostered the development of towns such as Hedges (Van Wormer and Newland 1996). Despite these events, the settlement and population growth of Imperial County did not begin to dramatically increase until the introduction of irrigation.

Prior to the advent of irrigation, the Imperial Valley was mostly used for cattle ranching. The Spanish established cattle ranching in Alta California in the 1760s along with the mission system, but located their livestock closer to the coast (Burcham 1982:118-119). During the Mexican Period, cattle ranching expanded exponentially as a part of the tallow and hide trade, though the desert region was never intensively used for ranching due to the lack of *rancho* land grants (Beck and Haase 1974). In the second half of the nineteenth century, cattle ranching in the Imperial Valley was limited to the southeastern area near the Colorado River and other reliable water sources (Brooks in Farr 1918:293). Substantial livestock ranching did not emerge in Imperial County until ca. 1910 when reliable water from irrigation was available (Burcham 1982:Appendix II Tables).

Imperial County did not attract large numbers of settlers until its agricultural potential was developed in the early 1900s. Irrigation of the valley was first suggested by Oliver Wozencraft in the late 1800s, and was accomplished in 1901 by Charles R. Rockwood and George Chaffey (Hoover et al. 1990:108). The introduction of irrigation in the Imperial Valley spawned both the development of large and small-scale agriculture and the establishment of many small towns. The area grew rapidly, and by 1907 nearly 15,000 people lived in the valley. In 1907, Imperial County was the last county in California to be incorporated as a jurisdiction separate from San Diego County (Hoover 1990:102). Agricultural crop production in Imperial Valley during the early twentieth century included grains such as barley and sorghum; fruits and vegetables such as cantaloupes, grapes, corn, and lettuce; cotton; and alfalfa for livestock (Packard 1918). The growth of the region was supported by the construction of the Southern Pacific Railroad branch line from Niland to Imperial and the construction of the San Diego and Arizona Eastern Railroad, both of which facilitated commercial export of agricultural products.

Imperial Valley was accidentally flooded between 1905 and 1907 due to a faulty irrigation canal gate, and consequently the Salton Basin was inundated and the Salton Sea was formed. Major improvements were subsequently made to the irrigation system to prevent future flooding. The

Imperial Irrigation District (IID) took control of the irrigation system in 1916 and, by 1941, a more reliable and consistent water supply was assured for the area with the completion of the All-American Canal (Imperial County Planning & Development Services Department 1993). Although agriculture continues to be the predominant activity in the Imperial Valley, other industries have become part of the wider economic base, including geothermal energy development, mining, customs brokers, tourism, and the provision of essential regional and national facilities such as correctional institutions and military training facilities (Zimmerman 1981).

During World War II, the Imperial Valley region was associated with several military uses. During the early years of World War II, "Buffalo Soldiers" (the all-Black unit formed in 1866) of the 9th and 10th Cavalry Regiments stationed at Camp Lockett in Campo patrolled the railroad (Vezina 1993). The United States military also maintained a presence in the area in the form of training (e.g., General George S. Patton, Jr. trained troops in the area) and test facilities (e.g., Naval Air Facility in El Centro). From 1939 to 1955, there was a United States Navy emergency outlying landing field located just east of Coyote Wells and south of the railroad tracks. The air field improvements were minimal and described as three leveled and graded unpaved runways, placed approach markers, and an installed wind sock (Military Museum.org 2016).

TRANSPORTATION

The northern Sonoran Desert and Imperial Valley historically formed parts of a transportation corridor connecting northern Mexico and Arizona with coastal California that was based on local topography and access to springs or wells. The original route was formed during Spanish Period explorations, witnessed continued, intermittent use during the Mexican Period, and became a well-known route in the early American Period. Highway 80 improved the east-west transportation network in the early twentieth century. Today, this approximate route continues as Interstate-8. The Spanish Anza Trail was used by other explorers, trappers, and gold seekers passing through California and subsequently became known as the Sonora Road, the Colorado Road, the Emigrant Trail, and the Butterfield Stage Route (Hoover et al. 1990:105; Beck and Haase 1974:52). In addition to its use by settlers and gold-seekers, the Sonora Road/Emigrant Trail was used from 1825 to 1865 for cattle drives from New Mexico and Texas to ranches in the Coast Ranges (Imperial County Planning & Development Services Department 1993). The Butterfield Overland Stage Company also used the Anza Trail wagon road route as part of its overland mail service from St. Louis to San Francisco beginning in 1857 and continuing until 1861 (Zimmerman 1981). The Butterfield Stage Route was used by subsequent stage lines until the railroads came to the region. According to historian M. Romer (1922:28), there were three stage stops across Imperial Valley en route to San Diego, including one at Coyote Wells. The stage stops consisted of a well, an adobe waiting room, and an adobe stable for changing horses. The Southern Pacific Railroad route across the region was completed in 1878 and superseded the wagon road for long-distance shipping.

The advent of the Southern Pacific Railroad and later railroads such as the San Diego and Arizona Eastern railroads improved the transportation of people and commodities across the region. The Southern Pacific Railroad linked Los Angeles with Yuma in the spring of 1877 (Daggett 1966). The rail line ran southeast across the Imperial Valley from Bertram to Yuma with a maintenance camp at Niland (Farr 1918:224). This line segment, which was completed in 1883, became part of the Sunset Route that extended between Los Angeles and New Orleans

(Solomon 1999). As the need for transportation facilities increased across the area, the Southern Pacific Railroad built a branch line south from Niland to Calexico, reaching Imperial in 1903 and El Centro by 1904 (Farr 1918:224). The Southern Pacific, however, did not extend service west to San Diego (Beck and Haase 1974:68).

The Southern Pacific, however, was not the only railroad in the area. The San Diego and Arizona Railroad was established in 1906 with the goal of constructing a transcontinental rail line from San Diego across San Diego and Imperial counties that would connect with the Southern Pacific Railroad at New River (Farr 1918:225). The San Diego and Arizona ownership was a secret partnership of Southern Pacific's Edward Harriman with John and Adolph Spreckels, who had better relations with San Diego society. The east-west oriented railroad construction lasted from 1907 to 1919, with passenger service available from San Diego to El Centro beginning in 1919. Communities that formed along this rail line included Coyote Wells, Plaster City, and Dixieland. From Plaster City, a private narrow gauge railway extended north to the Project area, which is described below. In 1933, the Spreckels-Harriman partnership dissolved and Southern Pacific reorganized the San Diego and Arizona Railroad as the San Diego and Arizona Eastern Railway Company. The San Diego and Arizona Eastern Railway continued to provide a vital link across the region until passenger service ceased in 1951 and Southern Pacific abandoned the line in 1977 (Fickewirth 1992:121). One rail segment between Plaster City and El Centro continued to support the gypsum industry until it was discontinued in 1984.

Highway 80 within Imperial County is part of a transcontinental highway extending across the southern United States from San Diego, California to Tybee Island, Georgia (Cooper 2004). Although some segments of the alignment existed prior to the 1920s, Highway 80 was formally commissioned in 1926. The pre-highway era east-west roadway alignment was first developed in 1912 by Tom Morgan, the future president of Pickwick Stage Lines (predecessor to Greyhound Lines), as an early motor stageline route (Henderson 1968). In 1913, the Auto Club of Southern California and local governments developed a plan to improve the roadway from El Centro to Yuma by building a wood plank road across the sand dunes. From 1916 to 1926, the road was plank-paved. In 1926, the planks were mostly removed and superseded by an oil-surfaced road (Henderson 1968). To the west of Winterhaven along Interstate-8, a section of existing plank road is currently designated as California State Landmark No. 845 (Office of Historic Preservation 1996). A second improvement to the roadway was made between 1913 and 1917 when a poured concrete segment of the road alignment west of Dixieland and south of the asphalt alignment was placed. In 1929, the State Highway paved sections of the highway including three miles west of Coyote Wells and a segment between Dixieland and Seeley. Highway 80 continued to be an important east-west transportation route until it was superseded by Interstate 8. The highway was decommissioned in 1964, but remained in use until Interstate 8 was completed in 1974 (Cooper 2004).

LOCAL SETTLEMENT

The region of Imperial County surrounding the Project area was settled primarily in the early twentieth century as irrigation systems were being developed and agricultural opportunities were becoming feasible. Historic period settlements near the Project area included El Centro, the nearest larger town, and several small settlements (Dixieland, Plaster City, and Coyote Wells) along the railroad and highway alignments.

El Centro

El Centro is located east of the Project area and is situated along the Southern Pacific Railroad branch between Niland and Calexico. The San Diego and Arizona Eastern Railway intersects the Southern Pacific line at El Centro. The El Centro Townsite Company filed a town plat for El Centro in 1905 to develop a town. El Centro was developed in conjunction with Holtville to the east as community hubs for the Holton Interurban Railroad and a community along the Southern Pacific branch line. By 1918, the population was 7,500. Local infrastructure included a fire department, an electric power plant, an ice plant, and a sewer system. Commercial ventures included a creamery, a cottonseed oil mill, and agriculture (Farr 1918:279-285).

DIXIELAND

Located 5 miles east of Plaster City, Dixieland was named in 1909 by land promoters hoping to attract cotton agriculture using the newly planned west side irrigation system (Gudde 2004:110). A post office was operating in the small, unincorporated community between 1912 and 1935 (Forte 2018). The expanded irrigation system was never built and the town never fully developed (URS 2010:2-35).

Plaster City

Plaster City was developed as a company town in the early 1920s adjacent to the San Diego and Arizona Eastern Railway line. An ore crusher was initially located at the site and a narrow gauge railroad was built to move ore to the crusher for shipment. In 1924, a plaster manufacturing plant was installed and a town was built for the employees (Tucker 1926:271). The Plaster City post office operated between 1924 and 1964 (Forte 2018). The 1942 State Mineralogist report noted that at that time, the Plaster City plant was operating three days a week with 15-20 employees manufacturing fertilizer, cement retardant, hard wall and finished building plasters, casting molding, and dental plaster (Sampson and Tucker 1942:136).

Coyote Wells

Coyote Wells was initially a stop along the Butterfield Stage Route. M. Romer (1922:28) noted the station would have featured a well and two adobe structures (waiting room and stables) present. In 1922, Romer (1922:28) noted the structures present at Coyote Wells were a garage, a wood frame store, and a post office. The historic post office listing (Forte 2018) does not indicate that Coyote Wells had an official post office.

MINING

The earliest recorded mining in Imperial County occurred during the Spanish Period (ca. 1779-1781) when placer gold was mined north of the short-lived Misión de La Purísima Concepción. When the mission was abandoned, mining ceased. During the Mexican Period, mining resumed in the Cargo Muchacho Mountains using arrastras (Henshaw 1942:152). Mining during the American Period did not become fully established until Fort Yuma was built and regional transportation systems improved sufficiently to allow for the transport of large, heavy machinery proximate to the mines. The advent of steamboats on the Colorado River (1852-1895) and the completion of the Southern Pacific Railroad in 1879 opened access to mining in the Cargo Muchacho Mountains and other areas of Imperial County in the later nineteenth century (Morton 1977:7). The railroad also provided national access for safely shipping ore out of the region.

Gypsum mining in California has been documented as early as 1875 with a plaster mill advertised in San Francisco. The mineral was initially ground and used for agriculture in the nineteenth century, but by the 1900-ca. 1908 period plaster of Paris, wall plaster, and stucco were being produced in Los Angeles (Ver Plank 1952:67). During the 1909-1919 period, gypsum mills such as the Pacific Cement Plaster Company started producing hardwall plaster and "cement" plaster (Ver Plank 1952:70). During the 1919-1940s period, companies like the US Gypsum Company were using calcined gypsum to produce plaster wall-boards (Ver Plank 1952:71). After World War II, gypsum plaster production declined generally and a number of companies left the wall-board industry. Following World War II, a few large companies such as US Gypsum Company remained in business and modernized their operations; a larger number of smaller companies also arose to producing agricultural-grade gypsum, or gypsite. Most gypsite has come from the Lost Hills region since the 1930s (Ver Plank 1952:72). In 1938, the Westvaco Chemical Division of Food Machinery and Chemical Corporation developed a synthetic gypsum that is used as a cement retarder and for agricultural purposes, which has affected the industry (Ver Plank 1952:72).

Much of the Project area, including the Plaster City Quarry with its associated gypsum deposits, is located in the Fish Creek Mountains Mining District in the southwest region of Imperial County. The mining district is primarily known for its gypsum deposits, though other minerals have been noted including gold, copper, tungsten, limestone, and silica (Morton 1977:26). The Fish Creek Mountains gypsum deposits were identified in the early 1900s (ca. 1902), but were not mined on a large scale until transportation systems were available to move the ore to processing locations. The Plaster City Quarry is the only active gypsum mine in Imperial County and the largest gypsum mine in the United States (Imperial County General Plan 1993). The 1942 State Mineralogist's report noted the gypsum deposit measured three miles long by one mile wide by 150 feet thick (Sampson and Tucker 1942:135). The first mining operations at the quarry date to 1902, but mining activities were sporadic and did not produce a large volume of gypsum until the completion of the San Diego and Arizona Eastern Railroad in 1920 and the Plaster City Railroad in 1922 (Imperial County General Plan 1993). The San Diego and Arizona Eastern Railroad provided an efficient means of moving gypsum out of the Imperial Valley by connecting to the Southern Pacific Railroad in El Centro. The 26-mile long Plaster City Railroad connected the Plaster City Quarry to the San Diego and Arizona Eastern Railroad depot at Plaster City.

The Imperial Gypsum and Oil Corporation owned the quarry in the early 1900s and built the narrow gauge US Gypsum Rail Line (also known as the Plaster City Railroad) in 1920-1921 to facilitate removal of large quantities of gypsum ore from the quarry to a crusher plant next to the San Diego and Arizona Eastern Railroad alignment (Tucker 1926:271). The Imperial Gypsum and Oil Corporation, however was not very successful and sold the quarry to the Pacific Portland Cement Company in 1924. The Pacific Portland Cement Company added a plaster manufacturing plant to the ore crusher, which became Plaster City, and operated the quarry until the mid 1940s (Tucker 1926:271). In 1947, the Plaster City Quarry and the Plaster City Railroad were purchased by US Gypsum Company, which continues to own and operate the quarry and its facilities. The US Gypsum Company modernized quarry operations by adding a 900-foot belt and two kilns among other improvements. During the 1940s-1960s, the Plaster City Plant produced plaster board, sacked lath, and plaster for agricultural uses (URS 2010:2-32). The US Gypsum Company continues to operate the quarry and plant today.

4.0 CLASS I INVENTORY ARCHIVAL AND RECORDS SEARCH

On April 9, 2018, a Class I inventory or archival and records search was conducted for the Project APE and a surrounding 0.25-mile radius at the South Coastal Information Center (SCIC) of the California Historical Resources Information System (CHRIS) at San Diego State University. The purpose of the archival and records search was to obtain documentation relating to prior studies and known cultural resources within and proximate to the Project APE (*see* Section 1.4). The locations and unique identifiers[1] for prior studies and known cultural resources were obtained from five USGS 7.5-minute topographic reference maps on file with the SCIC, including Borrego Mountain SE (1958 [1959 ed.]), Carrizo Mountain NE (1957 [1958 ed.]), Coyote Wells (1957 [1958 ed.]), Painted Gorge (1957 [1958 ed.]), and Plaster City (1957 [1958 ed.]), California.

The SCIC also provided copies of the following historic registers maintained by the State of California:

- NRHP Directory of Determinations of Eligibility (California Office of Historic Preservation, Volumes I and II 1990);
- Historic Property Data File for Imperial County (California Department of Parks and Recreation 2013);
- California Inventory of Historic Resources (California Department of Parks and Recreation 1976); and
- California Historical Landmarks (California Office of Historic Preservation 1996);
- California Points of Historical Interest (California Department of Parks and Recreation 1992).

Ancillary information obtained from the SCIC included the following:

- Caltrans Statewide Historic Bridge Inventory (California Department of Transportation 2018), which includes listings of bridges previously evaluated for listing in the NRHP and determined eligible for listing be not re-evaluated, bridges that remain unevaluated, and local agency bridges;
- Historic Highway Bridges of California (California Department of Transportation 1990), which includes listings of bridges previously evaluated for listing in the NRHP and determined eligible for listing be not re-evaluated, bridges that remain unevaluated, and local agency bridges;
- Historic American Landscapes Survey (HALS) Inventory – Northern California (California Office of Historic Preservation 2009);
- List of Historic Survey Reports (Bibliography) (California Office of Historic Preservation 1994); and
- Survey of Surveys: A Summary of California’s Historical and Architectural Resource Surveys (Department of Parks and Recreation 1989).

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[1] Unique identifiers for prior studies within Imperial County on file with the SCIC begin with “IM-”. Previously recorded cultural resources may or may not have been assigned a state Trinomial number (beginning “CA-IMP-“), but all will have a Primary number as a unique identifier. Primary numbers consist of a “P-” followed by a two-digit numeric county code (“13-“ for Imperial County) followed by a six digit number indicating the order in which it was assigned (e.g., P-13-000269, P-13-000321, etc.).

The Class I archival and records search included a review of all relevant USGS 7.5-minute and 15-minute topographic maps on file with the SCIC. Historic period GLO maps, available online, were consulted at the Berkeley Office of Pacific Legacy. Reports for prior studies conducted within the Class I archival and records search area were obtained in full if they resulted in positive findings (i.e., if they reported on the discovery of cultural resources) or in part if they yielded negative findings (i.e., they reported on no newly discovered cultural resources). Cultural resource records for archaeological sites, isolated finds, and historic period built environment resources also were collected in full from the SCIC. The spatial extents and basic attributes of each previously recorded cultural resource and prior study were acquired from the SCIC in the form of ArcGIS shapefiles. These data were "clipped" to the extents of the Class I archival and records search area and portrayed on USGS topographic maps and true-color orthophotographs to aid field personnel in relocating known cultural resources during the Class III pedestrian inventory survey.

4.1 SUMMARY OF PREVIOUS STUDIES

The Class I archival and records search revealed that 36 prior cultural resource studies have overlapped some portion of the Project APE while five additional studies have been conducted outside but within a 0.25-mile radius of the APE (*see* Table 4-1). These studies represented a wide array of cultural resource investigations, including archival and records search reviews, Class III pedestrian inventory surveys, Extended Phase I inventory survey and subsurface testing programs, cultural resource evaluation efforts, and data recovery excavations. The Class III pedestrian inventory survey conducted by Pacific Legacy in 2002 was the only one to encompass portions of the Plaster City Quarry. All other prior cultural resource studies overlapped or were proximate to the proposed waterline between Ocotillo and Plaster City or alternative waterline between Plaster City and the Westside Main Canal.

Of the 36 prior studies that overlapped the Project APE, only five were conducted in the last 10 years. These included studies undertaken in support of the SDG&E Sunrise Powerlink Project (IM-01350), Bragg Shooflies Project (IM-01351), USG Plaster City Plant Water Pipeline Pump House Development Project (IM-01541), Plaster City Water Pipeline Project (IM-01542), and Imperial Valley Solar Project (URS 2010).

- In 2008, Gallegos & Associates completed a cultural resource investigation for the SDG&E Sunrise Powerlink Project (IM-01350), which involved the Class III pedestrian inventory survey of a 155-mile long corridor for San Diego Gas & Electric spanning San Diego and Imperial counties. It overlapped approximately 58 acres within the current Project APE along the eastern end of the proposed alternative waterline identified for spot-check survey in 2018.
- The cultural resource investigation for the Bragg Shooflies Project (IM-01351) was completed by SWCA in 2008. It overlapped just 4.5 acres within the Project APE along the eastern end of the proposed alternative waterline identified for spot-check survey in 2018 and did not result in the discovery of cultural resources.
- In 2011, J. McKenna completed an impacts assessment for the SG Plaster City Plant Water Pipeline Pump House Development Project (IM-01541), which overlapped 1.8 acres within the Project APE along the proposed alternative waterline as it approaches the Westside Main Canal.

- The Plaster City Water Pipeline Project (IM-01542), completed by the US Army in 2012, encompassed much of the Plaster City Plant as well as a 315-foot corridor that bordered the southern margin of the current Project APE extending east towards the Westside Main Canal.
- In 2010, URS completed a Class III cultural resources inventory for the Imperial Valley Solar Project, which was noteworthy because it overlapped approximately 517 acres within the Project APE, or much of the proposed alternative waterline as it spans Plaster City and the Westside Main Canal. The area previously examined by URS within the Project APE defined the spot-check survey area examined by Pacific Legacy in 2018. A copy of the report detailing URS's findings was provided to Pacific Legacy by the El Centro Office of the BLM. Copies of records for cultural resources discovered or re-recorded during the Imperial Valley Solar Project served as critical baseline data for the spot-check survey along much of the proposed alternative waterline.

As noted above, Pacific Legacy conducted a cultural resources investigation for the Project in 2002 in support of the 2006 Draft and 2008 Final EIR/EIS (Holmes and Nadolski 2003). The investigation focused on the Plaster City Quarry area but did not encompass drainages that are subject to USACE permit authorization that have since been identified as part of the current APE. Three cultural resources were recorded during the 2002 study. These include the Plaster City Quarry and a historic period locus within the quarry (designated USG-01 in 2002 and renamed Locus 1 in 2018), Highway 80 (P-13-008418), and the Plaster City Railroad (P-13-008139). These resources are discussed below and in Section 6.0.

Table 4-1. Prior Cultural Resource Studies within the Class I Archival and Records Search Area.

Study Designation	Study Type	Title	Author(s)	Date	Positive/ Negative
Cultural Resource Studies within the Project APE					
IM-01275	Reconnaissance	An Analysis Of Culture Resources Along The Proposed Yuha Desert Orv Courses	E. Ritter	1975	Positive
IM-00199	Inventory	Cultural Resource Study of A Proposed Electric Transmission Line From Jade To The Sand Hills, Imperial County, California	C. Walker, C. Bull, and J. Von Werlhof	1979	Positive
IM-00203	Inventory	Class II Cultural Resource Inventory East Mesa And West Mesa Regions Imperial Valley, California, Volume I	D. Gallegos	1979	Positive
IM-00536	Inventory	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: History	D. Burkenroad	1979	Positive
IM-00537	Archaeological, Evaluation, Other research	Phase One Regional Studies APS/SDG&E Interconnection Project Transmission System Environmental Study Cultural Resources: Archaeology	Wirth Associates, Inc.	1979	---
IM-00538	Archaeological, Evaluation, Other research	Proposed Workscope Phase II Cultural Resources Studies APS-SDG&E Transmission Interconnect Project, Miguel to Sand Hills	Imperial County	1979	---
IM-00207	Inventory	Class II Cultural Resource Inventory East Mesa And West Mesa Regions Imperial Valley, California	E. Davis	1980	Positive

Study Designation	Study Type	Title	Author(s)	Date	Positive/ Negative
IM-00210	Excavation and Analysis	Archaeological Examinations Of The Republic Geothermal Field, East Mesa, Imperial County	J. Von Werlhof, and K. McNitt	1980	Positive
IM-01306	Ethnology	APS/SDG&E Interconnection Project Environmental Study Phase II Corridor Studies - Native American Cultural Resources Appendices	Wirth Associates, Inc.	1980	Positive
IM-01313	District and Site Evaluations	APS/SDG&E Interconnection Project (Phase II Corridor Studies) - Cultural Resources: Archaeology	Wirth Associates, Inc.	1980	Positive
IM-00233	Inventory	Cultural Resource Study Of A Proposed Electric Transmission Line From Jade To The Sand Hills, Imperial County, California	C. Walker, C. Bull, and J. Von Werlhof	1981	Positive
IM-00235	Archaeological, Evaluation, Other research	APS/SDG&E Interconnection Project - Supplement To The Draft Environmental Document	BLM	1981	---
IM-00252	Inventory Supplement (Site Table)	Volume II Appendix; Phase Ii; Archaeological Survey Of The La Rosita 230 kV Interconnection Project	J. Schaefer	1981	Positive
IM-00279	Inventory	Phase III Archaeological Survey Of The Mountain Springs (Jade) To Sand Hills Portion Of The APS/SDG&E Interconnection Project 500 kV Transmission Line	S. Shackley	1982	Positive
IM-00547	Research Design and Data Recovery	Draft Archaeological Research Design And Data Recovery Program For Cultural Resources Within The Mountain Springs (Jade) To Sand Hills Portion Of The APS/SDG&E Interconnection Project 500 kV Transmission Line	Cultural Systems Research, Inc.	1982	Positive
IM-00595	Data Recovery	Mountain Springs (Jade) To Sand Hills Data Recovery Preliminary Report	CSRI	1982	Positive
IM-01315	Record Search and Inventory Maps	Volume II - Phase III Archaeological Survey Of The Mountain Springs (Jade) To Sand Hills Portion Of The APS/SDG&E Interconnection Project 500 kV Transmission Line Confidential Technical Appendices	S. Shackley	1982	Positive
IM-00297	Inventory	Archaeological Examinations Of Petty Ray Geophysical Transects On West Mesa	J. Von Werlhof	1983	Positive
IM-01308	Archaeological, Evaluation, Other research	Southwest Powerlink Cultural Resources Management Plan (Draft)	J. Townsend	1983	---
IM-00311	Archaeological, Evaluation, Other research	Southwest Powerlink Cultural Resources Management Plan - Volume II	J. Townsend	1984	---
IM-00313	Management Plan	Southwest Powerlink Cultural Resources Management Plan - Volume I	J. Townsend	1984	Positive
IM-00316	Data Recovery Tables	Volume II - Appendixes, Data Recovery On The Mountain Spring (Jade) To Sand Hills Segment: Southwest Powerlink Project	S. Shackley	1984	Positive

Study Designation	Study Type	Title	Author(s)	Date	Positive/ Negative
IM-00319	Testing, Data Recovery and Analysis	Archaeological Investigations In The Western Colorado Desert: A Socioecological Approach; Data Recovery On The Mountain Spring (Jade) To Sand Hills Segment: Southwest Powerlink Project - Volume I	S. Shackley	1984	Positive
IM-00737	Archaeological, Evaluation, Other research	Desert Material Sites: West Imperial County Bear, Coyote, Plaster City, Underpass, Yuha	Caltrans	1989	---
IM-00766	Inventory and Testing	Extended Phase I Study Of Eight Archaeological Sites (Ca-IMP-1427, -3969, -6914, -6915, -6916, -6918, -6920, -6923) On State Route 98, Imperial County, California	J. Schaefer, D. Pallette, C. O'Neill, and J. Eighmey	1999	Positive
IM-00892	Archaeological, Evaluation, Other research	Cultural Resources Inventory Report For NEPA 2001-39, CACA-42904 NTCH-CA, Inc., DBA RIO-TEL Communication Site	M. Hangan	2001	---
IM-01182	Testing and Monitoring	Final Report On Cultural Resource Monitoring Along The Level (3) Long Haul Fiber Optic Running Line, San Diego, California To Yuma, Arizona, San Diego And Imperial Counties	S. Yost, M. Mirro, L. Rhodes, J. Ing, H. Higgins	2001	Positive
---	Inventory	Archaeological Investigations for the U.S. Gypsum Company Quarry Expansion and Water Pipeline Replacement Project In Imperial County, California	A. Holmes, J. Nadolski (Pacific Legacy)	2003	Positive
IM-00984	Archaeological, Evaluation, Other research	Proposed Cellular Phone Communications Tower & Facility	J. Redlin	2005	---
IM-01228	Inventory and Monitoring	Volume I - Cultural Resources Final Report Of Monitoring And Findings For The Qwest Network Construction Project, State Of California	SWCA	2006	Positive
IM-01092	Inventory	A Phase I Cultural Resources Investigation Of The Proposed USG Pipeline Alignment, Approximately Five Linear Miles Near Plaster City, Imperial County, California	J. McKenna	2007	Positive
IM-01350	Archaeological, Evaluation, Other research	Final Class III Archaeological Inventory For The SDG&E Sunrise Powerlink Project, San Diego And Imperial Counties, California	A. Noah, D. Gallegos	2008	---
IM-01351	Archaeological, Evaluation, Other research	Cultural Resources Survey For The Bragg Shooflies Project, Imperial County, California	M. Tuma, V. Austerman, J. Dietler	2008	---
---	Inventory	Class III Cultural Resources Technical Report for the Imperial Valley Solar Project, Imperial County, California	URS (R. Farmer, E. Roberts, G. Tucker, R. Mutaw)	2010	Positive
IM-01541	Archaeological, Evaluation, Other research	A Cultural Resources Assessment Of Potentially Adverse Impacts To The Westside Main Canal As A Result Of The USG Plaster City Plant Water Pipeline Pump House Development West Of El Centro, Imperial County, California	J. McKenna	2011	---

Study Designation	Study Type	Title	Author(s)	Date	Positive/ Negative
IM-01542	Archaeological, Evaluation, Other research	Plaster City Water Pipeline Project	Department of the Army	2012	---
Cultural Resource Studies Outside the Project APE and within a 0.25-Mile Radius					
IM-00603	Archaeological, Evaluation, Other research	Archaeological Report On Proposed Water Main Lines For Coyote Valley Mutual Water Company	J. Von Werlhof	1997	---
IM-00918	Inventory and Testing	Cultural Resources Survey And Assessment Of A Cellular Phone Tower Site Near Coyote Wells And The Results Of Test Excavations At Prehistoric Site CA-IMP-7813, Imperial County, California	P. de Barros	2000	Positive
IM-01057	Reconnaissance	Cultural Resource Study Of The Mount Signal And Dixie Ranch Imperial County Prison Alternatives Imperial County, California	A. Pigniolo, R. Phillips, D. Gallegos	1990	Positive
IM-01245	Inventory	Cultural Resources Inventory For Plaster City And Superstition Mountain Open Areas Race Routes, Imperial County, California	K. Ahmet, S. Bholat, and E. Chandler	2007	Positive
IM-01330	Inventory	Final Cultural Resources Survey Of Alternatives For The Sunrise Powerlink Project In Imperial, Orange, Riverside, And San Diego Counties, California	SWCA	2008	Positive

Note: Positive/Negative indicates whether studies resulted in the recordation of cultural resources.
Unless otherwise cited within the text, bibliographic information for the reports listed above is not replicated in the references in Section 8.0, though all reports are on file with the SCIC.

4.2 SUMMARY OF PREVIOUSLY RECORDED CULTURAL RESOURCES

The Class I archival and records search revealed that 65 cultural resources have been previously documented within the Project APE while an additional 118 resources have been recorded outside of the APE but within a surrounding 0.25-mile radius (*see* Tables 4-2 and 4-3). Cultural resources that intersect the Project APE include 14 prehistoric archaeological sites, 30 historic period archaeological sites or built environment resources, 11 multi-component resources containing both prehistoric and historic period elements, and 10 isolated finds. The prehistoric resources comprise mostly lithic and ceramic scatters, though some were reported to contain groundstone (P-13-000269, P-13-004954, P-13-008139, P-13-008323, P-13-009594, P-13-011165, and P-13-011628) or hearth features (P-13-010068 and P-13-009594) and one was recorded as a remnant Native American trail (P-13-007421). Nine of the 10 isolated finds are prehistoric flaked stone or groundstone artifacts while one consists of a 1941 USGS survey marker.

Many of the historic period resources recorded in the Project APE consist of debris scatters containing cans, bottle glass, and/or ceramics likely associated with road or railway corridors. Fourteen of the historic period resources comprise concrete survey markers, some with associated debris or signage. Notable historic period built environment resources include Highway 80 (P-13-008418) as well as the Plaster City Quarry, Plaster City Plant (P-13-009303), Plaster City Railroad (P-13-008139), and San Diego and Arizona Eastern Railroad (P-13-009302). The Plaster City Plant and Plaster City Railroad (also known as the US Gypsum Rail Line) were built in 1920-1921 to facilitate the transport and processing of gypsum from the Plaster City Quarry, which was established in 1902. The Plaster City Railroad was most recently recorded in

2009 by URS as a part of a multi-component resource featuring a prehistoric lithic and ceramic scatter located approximately 8 miles from the quarry along the railroad alignment well beyond the Project APE. Appendix A depicts previously recorded cultural resources within the Project APE according to data provided by the SCIC. Table 4-2 provides a summary of those resources and the recording history of each. Table 4-3 provides a summary of the 118 resources (87 archaeological sites or built environment resources and 31 isolated finds) that have been recorded outside of the APE but within the broader Class I inventory area. Although these 118 resources will not be impacted by the Project, they provide a useful context through which to better understand the prehistoric and historic period use of the Project vicinity.

Table 4-2. Cultural Resources Previously Recorded within the Project Area of Potential Effects.

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
Archaeological Sites and Historic Period Built Environment Resources within the Project APE					
P-13-000001 CA-IMP-1	Prehistoric	Unknown	1950	Scatter of Yuma Desert Ware ceramic potsherds.	NEV
		A. Lower	1983		
P-13-000269 CA-IMP-269 (Subsumes: CA-IMP-994, CA-IMP-995, CA-IMP-997, CA-IMP-1426, CA-IMP-2443, and CA-IMP-4677)	Prehistoric	E. Acker, R. Avels, E. Collins	1976	Extensive prehistoric site extending across five sections of the Plaster City 7.5-min. quadrangle, consisting of over 50 sites/loci that were recorded beginning in 1976 and subsumed under site CA-IMP-000269 (originally recorded as seven sites by Ackers, Avels, and Collins in 1976) by 2016. The site comprises lithic scatters (noted as “massive”) composed of debitage and a wide range of tools (green porphyry, CCS, quartzite, and metavolcanic material) described as “innumerable”, including projectile points, scrapers, choppers, cores, hammerstones, drills, knives, milling stone fragments, and cooking stones. Also present are high quantities of buffware and brownware potsherds (many blackened), at least one hearth feature and other possible hearths, and a cremation (Von Werlhof 1976).	RE (URS 2008)
		B. Johnson (CA-IMP-364)	1976		
		McI (CA-IMP-1426)	1976		
		J. von Werlhof (CA-IMP-994, -995, 997)	1976 1976 1976		
		J. Vogel (CA-IMP-2443)	1978		
		W. Hyde (CA-IMP-4677)	1981		
		J. McKenna	2007		
		R. Nixon	2008		
		URS (CA-IMP-995)	2008		
		E. Kowalski	2009		
		B. Williams, B. Comeau	2009		
		J. Lennen	2016		
P-13-000321 CA-IMP-321	Prehistoric	H. Ronnenburg	1974	Lithic and ceramic scatter consisting of debitage, charcoal, and potsherd, located 100 feet from a cremation site (CA-IMP-000360). P-13-000321 was not relocated in 2007; possibly disturbed by railroad construction.	NEV
		J. McKenna	2007		
P-13-002355 CA-IMP-2355	Prehistoric	H. Pritchett	1977	Lithic scatter of six light green porphyry debitage.	NEV
P-13-004193 CA-IMP-4193H	Historic	J. Townsend	1979	Debris scatter with two loci, consisting of bottle/jar glass, ceramic piece, metal.	NEV

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
P-13-004340 CA-IMP-4340	Prehistoric	R. Norwood	1980	Sparse lithic scatter with cores. Later recordings of P-13-004391 (Fariello 2008; Albush 2009) were mistakenly lumped and identified with this site.	NEV
P-13-004391 CA-IMP-4391/H	Multi-component	J. Townsend, S. Fulmer	1981	Prehistoric component consists of a sparse lithic scatter with debitage, cores, and Tizon brownware and Colorado Buffware sherds. Historic component consists of berms, depressions, coal-clinker stained soil, and a debris scatter of metal, ceramics, and glass vessel fragments, including amethyst, bottles, and cans, 1900s-1920s.	NEV
		J. Fariello	2008		
		C. Albush	2009		
P-13-004954 CA-IMP-4954	Prehistoric	McNitt and Collins	1983	Lithic scatter, including debitage, scrapers, cores, blades, and hammerstones, one "white quartz cairn", and one "white quartz power station". The site was not relocated in 2007, and the area was found to have impacts from the railway realignment and water treatment facility development.	NEV
		J. McKenna	2007		
P-13-007421 CA-IMP-7421	Prehistoric	IVC Archaeological Field School	1993	Prehistoric trail; the northern extension destroyed by road frontage and Interstate 8, southern extension destroyed by sheet wash erosion.	NEV
P-13-008139 CA-IMP-7739/H Plaster City Railroad	Multi-component	L. Kastoll	1998	Prehistoric component is a lithic and ceramic scatter including debitage, cores, tools, groundstone, fire-affected rock, midden, cairns, fish and mammal bone, and 300+ potsherds (Colorado Buffware, Tumco, Tizon brownware, Salton buffware, Black Mesa buffware), and a coprolite of unknown date. The recorded historic component consists of a portion of the 27-mile narrow gauge US Gypsum Rail Line (which traveled between the mine and plant), locomotives, 11 drainage culverts, a railroad bridge (1922) over Carrizo Wash, and a possible iron flintlock/sidelock.	RNE (URS 2009)
		J. Berryman	2002		
		A. Holmes	2002		
		URS	2009		
P-13-008323 CA-IMP-7816/H SDY-S-4	Multi-component	D. James, R. Bark, M. Caldwell	1999	Prehistoric component consists of one highly polished bifacial granite handstone. Historic component originally recorded as a historic railroad stop with debris scatter on either side of a Union Pacific Railroad alignment, it was later determined to be a likely temporary campsite along the railroad and adjacent roads, with corrections made to location (McKenna 2007).	NEV
		J. McKenna	2007		
		R. Nixon	2008		

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
P-13-008334 CA-IMP-7834H Westside Main Canal	Historic	J. Hupp	1999	Sections of the approximately 40-mile long Westside Main Canal (built in 1907), an earthen levee canal, including associated structures and bordered by dirt roads for maintenance. Part of the Imperial Irrigation District Canal System.	Various segments RE (Harris 2000, McKenna 2007, Burkhard et al. 2007, EPG 2007, Mitchell et al. 2012) Various segments RNE (including canal segment within Project APE, URS 2009) Portion of Canal under Interstate 8 determined NE (Hupp 1999)
		N. Harris	2000		
		J. Burkhard, H. Thompson, J. Covert	2007		
		EPG	2007		
		J. McKenna	2007		
		URS	2009		
		C. Bowden-Renna	2010		
		AECOM	2011		
		C. Bodmer, B. Bartram, B. Johnson	2011		
		J. Krintz	2011 2011 2011		
		Heather Thompson	2011		
		H. Thomson	2011		
		P. Mitchell, E. Maier, H. Thomson	2012		
		J. Lennen	2017		
P-13-008418 CA-IMP-7886 US Highway 80	Historic	D. Pallette, S. Ghabhláin	2001	Portions of US Highway 80 (2,671 miles from Savannah, Georgia, to San Diego) that fall within Imperial County and extend through Plaster City, built in the 1910s-1920s. Improvements were made in the 1930s as New Deal projects of the Federal Bureau of Public Roads. Recorded alignments consist of in-use segments as well as portions used up to the 1960s, and comprise Portland Cement paved two-lane roadway, original oil and sand roadbed, bridges, and culverts. (The “Old Highway 80” in San Diego County is P-37-024023.)	Various segments RNE (URS 2009, ASM Affiliates 2010, AECOM 2011)
		A. Holmes	2002		
		J. Steely	2007		
		J. McKenna	2007		
		URS	2009		
		Brian Williams	2009		
		M. Pumphrey	2010		
		AECOM	2011		
		Jill Gibson, M. Meiser	2011		
		J. Krintz	2011		
P-13-009302 CA-IMP-8489H San Diego and Arizona Eastern Railroad	Historic	J. McKenna	2007	Segments of the San Diego and Arizona Eastern Railroad (built 1907-1919), which connected San Diego to El Centro (the connection to Southern Pacific network). The resource includes intact rails and tracks; railroad bridges, including several timber trestle bridges with railroad signs; fences; historic and modern debris scatters.	Various segments RE (ASM Affiliates 2009, AECOM 2011) Two segments RNE (URS 2009)
		A. Wesson, J. Shrieve, M. Hares, K. McLean, G. Connell, J. Burkhard	2007		
		M. Dalope, S. Gunderman/ ASM Affiliates	2009		
		URS	2009		
		C. Bowden-Renna	2010		

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
		P. McGinnis	2010		
		AECOM	2011		
		J. Krintz	2011		
P-13-009303 Plaster City Plant	Historic	URS	2009	The Plaster City Plant, built in 1920-1921 by Imperial Gypsum and Oil Corporation (1922-1924), sold to Portland Cement Company (1924-1945), then to US Gypsum (1945-present). The plant is divided into two portions by Highway-80. The north side includes the administration building (partially 1940s), non-historic processing barn, and parking lot. The South side has a greater concentration of structures, mostly non-historic warehouses and storage containers, with one historic period two-story warehouse (1940s). The plant has had several building/improvement episodes from the 1940s onward.	RNE (URS 2009)
		J. McKenna	2007		
P-13-009594 CA-IMP-8658 DP-S-046	Prehistoric	N. Doose, W. Welsh, J. Huval, M. Werle, T. Osura	2007	Sparse lithic and ceramic scatter, including debitage (metavolcanic, obsidian), battering stone, core, corner-notched projectile points (CCS), two handstones, groundstone fragment, a hearth feature, and 29 pottery sherds.	NEV
P-13-009729 D3-S-59	Prehistoric	L. Piek, B. Williams, B. Linton	2007	Lithic and ceramic scatter consisting of debitage (metavolcanic and jasper), two metavolcanic cores, and 15 potsherd fragments (buffware and brownware).	NEV
P-13-010066 CA-IMP-8969/H EBR-303	Multi-component	A. Ruelas	2008	Prehistoric component consists of a metavolcanic primary flake, a quartzite primary flake, and three Colorado Buffware potsherds. Historic component is comprised of two loci of debris scatter, consisting of cans, bottle glass, and faunal bones, all material mostly burnt.	NEV
		URS	2008		
P-13-010068 CA-IMP-8971 EBR-305	Prehistoric	A. Ruelas	2008	Lithic and ceramic scatter consisting of a metavolcanic flake, a quartzite flake, a deflated hearth, two black ceramic sherds, and three Colorado Buffware sherds.	NEV
		URS	2008		
P-13-011165 CA-IMP-10171 DP1	Prehistoric	E. Collins, IID & IVC Archaeology Class	1999	Lithic and ceramic scatter, consisting of 30 flakes (quartzite, porphyry, jasper), 14 porphyry cores/fragments, two quartzite cores, three handstones (granite, basalt, quartzite), and 110 potsherds, mostly probable Colorado buff, two with black interior and temper.	NEV
P-13-011542 CA-IMP-10455/H JM-021	Multi-component	C. Albush	2009	Prehistoric component consists of eight pieces of debitage, two cores, and one core tool. The historic component consists of 20 pieces of bottle glass, including bases, one white ceramic fragment, a bucket handle, and cans. There are eight rock cluster features (metavolcanic and quartz cobbles) of indeterminable age.	NEV

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
P-13-011544 CA-IMP-10457/H JM-026	Multi-component	C. Albush	2009	Prehistoric component is comprised of approximately 1,319 artifacts, consisting of debitage, edge-modified flakes, bifaces, hammerstones, cores/core tools, and choppers (metavolcanic, quartzite, CCS, petrified wood), in 69 concentrations, and two possible deflated hearths. Historic component includes a rock collection pile and three concentrations of debris (cans, glass, metal, ceramics, and burnt faunal bone), totaling approximately 676 artifacts.	NEV
P-13-011626 CA-IMP-10538/H S2-SLY-1	Multi-component	K. McLean	2009	Prehistoric component consists of 131 artifacts (CCS, quartzite, metavolcanic) in two loci, including debitage, two cores, and two hammerstones, and 94 buffware and 15 brownware ceramic sherds. Historic component consists of 203 artifacts, including bottle glass, cans, fish tins, and tableware fragments.	NEV (subsurface testing recommended, McLean 2009)
P-13-011627 CA-IMP-10539/H S2-SLY-3	Multi-component	B. Glenn	2009	Prehistoric component is concentrated in one loci, and consists of four flakes (CCS, metavolcanic), and 27 brownware ceramic sherds. Historic component (date range 1935+) is located in one locus and consists of nine cans and eight glass fragments.	NEV (subsurface testing recommended, Glenn 2009)
P-13-011628 CA-IMP-10540 S2-SLY-5	Prehistoric	D. Kay	2009	Lithic (CCS, quartzite, metavolcanic) and ceramic scatter, including three loci; consisting of debitage, cores, hammerstones, handstone and milling slab fragments, and 258 buffware sherds.	NEV (subsurface testing recommended, Kay 2009)
P-13-011629 CA-IMP-10541H S2-SLY-25	Historic	D. Kay	2009	Debris scatter of 64 artifacts, consisting of cans, bottle glass, and rubber tire fragments (deposited 1935+).	RNE (Kay 2009)
P-13-011630 CA-IMP-10542H S2-SLY-26	Historic	D. Kay	2009	Debris scatter of 20 artifacts, consisting of cans, bottle glass, miscellaneous metal, and a rubber mat (deposited 1955+).	RNE (Kay 2009)
P-13-011631 CA-IMP-10543H S2-SLY-27	Historic	D. Kay	2009	Debris scatter of 20 artifacts, consisting of cans, bottle glass, and a metal ring (deposited 1956+); a dislodged concrete state route marker with beveled edges, impressed "C", and copper plug inset at top (1914-1934); and an isolate basalt flake.	RNE (Kay 2009)
P-13-011632 CA-IMP-10544H S2-SLY-28	Historic	D. Kay	2009	Debris scatter of 17 artifacts, consisting of cans and bottle glass (deposited 1935-1960s).	RNE (Kay 2009)
P-13-011633 CA-IMP-10545/H S2-SLY-29	Multi-component	D. Kay	2009	Prehistoric component consists of 6 pieces of lithic debitage (metavolcanic, jasper, CCS). Historic component consists of 106 artifacts, comprised of cans, bottle glass, and one metal plate (deposited 1958+).	RNE (Kay 2009)

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
P-13-011634 CA-IMP-10546H S2-SLY-30	Historic	D. Kay	2009	Debris scatter in two concentrations, consisting of at least 137 artifacts, including bottle glass, cans, box spring remains, and rubber tire fragments (1920s-1950s).	RNE (Kay 2009)
P-13-011635 CA-IMP-10547/H S2-SLY-31	Multi-component	D. Kay	2009	Prehistoric component consists of one basalt tertiary flake and two buffware ceramic sherds. Historic component is a concrete "C" state survey marker with copper plug, and 723 artifacts, including bottle glass, cans, miscellaneous metal, ceramic insulators, and electrical wire (1916-1954+).	NEV (subsurface testing recommended, Kay 2009)
P-13-011636 CA-IMP-10548H S2-SLY-32	Historic	K. McLean	2009	Concrete "C" state survey marker with copper plug, and debris scatter of 13 artifacts, including cans, a glass tumbler and bottle base.	RNE (McLean 2009)
P-13-011637 S2-SLY-33	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935).	NEV
P-13-011638 S2-SLY-34	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935).	NEV
P-13-011639 S2-SLY-35	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935).	NEV
P-13-011640 S2-SLY-36	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), and a later T-post.	NEV
P-13-011641 S2-SLY-37	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), and associated post and metal sign.	NEV
P-13-011642 S2-SLY-38	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug, and a later T-post.	NEV
P-13-011643 S2-SLY-39	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), and a later T-post.	NEV
P-13-011644 S2-SLY-40	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), and a later T-post and metal sign.	NEV
P-13-011645 S2-SLY-41	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), associated metal sign, and nearby broken wood lath pieces.	NEV
P-13-011646 S2-SLY-42	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), a dislodged later T-post and wood lath piece.	NEV
P-13-011647 S2-SLY-43	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), and a later T-post.	NEV
P-13-011648 S2-SLY-44	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935), an adjacent associated T-post and metal sign, and wood lath piece.	NEV
P-13-011649 S2-SLY-45	Historic	K. McLean	2009	Concrete "C" marked state survey marker with copper plug (1914-1935) and a later T-post and associated metal sign.	NEV

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
P-13-011790 CA-IMP-10612H JF-015E	Historic	J. Fariello	2008	Debris scatter of 23 artifacts, consisting of cans and bottles (1930s-1960s).	NEV
P-13-011792 CA-IMP-10613H JF-017	Historic	J. Fariello	2008	Debris scatter consisting of 30 cans and several bottles (1930s-1960s).	NEV
P-13-011793 CA-IMP-10614 JF-022	Prehistoric	J. Fariello	2008	One metavolcanic flake and four Tizon brownware ceramic sherds.	NEV
P-13-011794 CA-IMP-10615/H JF-025	Multi-component	J. Fariello	2008	Prehistoric component consists of three metavolcanic flakes, and three Tizon brownware ceramic sherds. Historic component is a debris scatter in three loci, comprising bottle glass and a .50-caliber cartridge (1940s-1960s).	NEV
P-13-011801 CA-IMP-10621H JFB-010E	Historic	J. Fariello	2008	Debris scatter comprised of cans, bottle glass, and a single ceramic handle fragment (1920s-1940s).	NEV
P-13-012244 CA-IMP-12424H Fages-De Anza Trail	Historic	B. Williams	2009	Historic trail utilized by early Spanish occupants, trappers, the US Army, 49ers, settlers, and as a delivery route. The recorded portion is 100-meter segment severely worn and widened by off-highway vehicles.	NEV
P-13-012732 CA-IMP-11181 T-2570	Prehistoric	E. Collins, D. Bradshaw	2003	Prehistoric scatter of over 25 Colorado Buffware ceramic sherds, at least five black porphyry flakes, and four fire-affected rocks.	NEV
P-13-013126 CA-IMP-11437H IID-S-002	Historic	C. Bowden-Renna, T. Cooley, W. Glenny, L. Kry	2009	Debris scatter beside railroad tracks, consisting of cans, bottle glass, and milled lumber (1885-1930s). Possibly associated with the San Diego and Arizona Eastern Railroad.	NEV
Plaster City Quarry	Historic	A. Holmes	2002	This resource consists of an active gypsum quarry that has been in operation since 1902. Imperial Valley Gypsum and Oil Company. The Pacific Portland Cement Company bought the quarry in 1924 and operated it until 1946. USG acquired the quarry in 1946 and currently owns and operates it. The record for this resource was not submitted to the SCIC in 2002 and did not receive a Primary or Trinomial designation. Originally recorded as USG-01, the Plaster City Quarry contains a historic period locus (Locus 1) that consists of a U-shaped, dry-laid stacked stone structure with a hearth inside and a historic debris scatter. Because the record for USG-01 was not submitted to the SCIC in 2002 as a separate resource and did not receive a Primary or Trinomial designation, it has been included as a part of the larger Plaster City Quarry site.	NEV

Resource Designation(s)	Period	Author(s)	Date	Description	NRHP/ CRHR Status
Isolated Finds within the Project APE					
P-13-002040 CA-IMP-2040	Prehistoric	H. Pritchett	1977	Isolated quartzite scraper.	NE
P-13-004389 CA-IMP-4389	Prehistoric	J. Townsend	1981	Isolated buffware ceramic sherd.	NE
P-13-009727 D3-I-58	Prehistoric	L. Piek, B. Williams, B. Linton	2007	Isolate gray metavolcanic flake.	NE
P-13-011740 SLY-ISO-2	Prehistoric	B. Glenn	2009	Isolate metavolcanic hammerstone.	NE
P-13-011741 SLY-ISO-4	Prehistoric	B. Glenn	2009	Isolate metavolcanic secondary flake.	NE
P-13-011742 SLY-ISO-6	Prehistoric	B. Glenn	2009	Isolate metavolcanic tested cobble.	NE
P-13-011743 SLY-ISO-7	Prehistoric	B. Glenn	2009	Isolate metavolcanic secondary flake.	NE
P-13-011744 SLY-ISO-8	Prehistoric	Caltrans	2009	Isolate handstone fragment.	NE
P-13-011847 JF-002-I	Prehistoric	J. Fariello	2008	Isolate chalcedony tertiary flake.	NE
P-13-013118 IID-I-022	Historic	C. Bowden-Renna, T. Cooley, W. Glenny, L. Kry	2009	Isolated USGS Survey marker (1941), located on north side of railroad tracks.	NE

Note: NRHP/CRHR Status indicates the eligibility status of Class I resources for listing in the National and/or California Register according to the Historic Property Data File for Imperial County (California Department of Parks and Recreation 2013) and cultural resource records on file with the SCIC. NE = Not Eligible; NEV = Not Evaluated; RE = Recommended Eligible;
RNE = Recommended Not Eligible.
Unless otherwise cited within the text, bibliographic information for the cultural resource records listed above is not replicated in Section 8.0 References, but all records cited above are on file with the SCIC.

Table 4-3. Cultural Resources Previously Recorded Outside of the Project Area of Potential Effects and Within the Class I Archival and Records Search Area.

Resource Designation(s)	Period	Author(s)	Date	Description
Archaeological Sites and Historic Period Built Environment Resources Outside the Project APE and within a 0.25-Mile Radius				
P-13-000453 CA-IMP-453	Prehistoric	M. Barker	1976	Site comprised of a large quantity of potsherds; one intact pot reportedly recovered. The site was destroyed by heavy equipment leveling.
P-13-001417 CA-IMP-1417/H	Multi-component	P. Meadville	2009	Prehistoric component is a lithic scatter, buffware and brownware potsherd scatter, and one fire-affected rock feature. Historic component was recorded separately (Nixon 2009) and consists of a 1920s-1950s can and bottle debris scatter.
		R. Nixon	2009	
P-13-001663 CA-IMP-1663	Prehistoric	L. Laurie	2008	Extensive lithic and buffware/brownware ceramic potsherd scatter, comprising 12 features and 15 loci; including cores, bifaces, a Desert Side-notched projectile point, hearth features, and a possible human cremation.
P-13-001996 CA-IMP-1996	Prehistoric	R. Miller	1977	Lithic scatter comprised of black basalt and green porphyry.
P-13-001997 CA-IMP-1997	Prehistoric	H. Pritchett	1977	Lithic scatter with tools and hammerstone, all porphyry.
P-13-002034 CA-IMP-2034	Prehistoric	H. Pritchett	1977	Lithic scatter, mostly porphyry, including two cores and a chopper; site was bladed.

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-002356 CA-IMP-2356	Prehistoric	H. Pritchett	1977	Lithic scatter of four green porphyry flakes and a core, and a basalt hammerstone.
P-13-002358 CA-IMP-2358	Prehistoric	H. Pritchett	1977	Lithic scatter consisting of a green porphyry chopper, debitage, and hammerstone.
P-13-002361 CA-IMP-2361	Prehistoric	H. Pritchett	1977	Site consisting of two porphyry cores and an igneous chopper.
P-13-002420 CA-IMP-2420	Multi-component	K. Avels, E. Collins	1975	Prehistoric component is a lithic scatter of at least five porphyritic flakes, six granite milling slab fragments, a deflated hearth with 30 fire-affected rocks and charcoal deposits, and over 12 Tizon brownware ceramic sherds, and quartz. An earlier recording (Avels and Collins 1975) describes a scatter of worked porphyry, including choppers, a scraper, a knife, and some redware sherds. The historic component (Miller 1977) was originally recorded as CA-IMP-3184-H (subsumed by P-13-0002420; not noted in 2007 record) and consists of an old watering place where a store was established about 1909.
		R. May, R. Pettus	1976	
		R. Miller (CA-IMP-3184-H)	1977	
		A. Pigniolo, J. Aguilar	2007	
P-13-003396 CA-IMP-3396H	Historic	Unknown	No Date	Site originally recorded as the Crossed Express Trail to Fort Yuma, Nevada. The trail was not relocated in 2009.
		B. Williams	2009	
P-13-003505 CA-IMP-3505H	Historic	J. Johnson	1977	Two loci of rock cairns, one with 68 cairns, one with four, in an area heavily impacted by military occupation and off-highway vehicles.
P-13-003689 CA-IMP-3689/H	Multi-component	J. von Werlhof	1980 1981	Lithic workshop and artifact scatter of numerous porphyry tools, one redware potsherd, and likely historic rock ring and cairns. In 2003 the site found to be generally as originally recorded, but significantly smaller/diminished.
		M. Hangan	2003	
P-13-003761 CA-IMP-3761H (Subsumes P-13-010017, P-13-010018, P-13-010019)	Historic	C. Walker, DarD.la Ferguson	1979	Debris scatter with three loci, consisting of cans, bottles, ceramics, auto parts, insulators, barbed wire, and structural debris.
		R. Nixon (P-13-010017/CA-MRP-8919)	2008	
		URS (P-13-010017/CA-IMP-8919; P-13-010018/CA-IMP-8920; P-13-010019/CA-IMP-8921)	2008	
		D. Barklow (P-13-010017/CA-IMP-8919; P-13-010018/ CA-IMP-8920)	2009	
		B. Comeau	2009	
		P. Meadville, R. Nixon, S. Black (P-13-010019/CA-IMP-8921)	2009	
P-13-004471 CA-IMP-4471	Prehistoric	N. Nagle	1981	Ceramic scatter of six Colorado Buffware sherds.
P-13-004603 CA-IMP-4603-I	Prehistoric	F. Nelson	1981	Ceramic and lithic tool, groundstone, and debitage scatter, and two hearth features.
		J. Fariello	2008	
P-13-006687 CA-IMP-6687	Prehistoric	J. Schaefer, D. Pallette	1992	Lithic debitage scatter, poor quality brown chalcedony.

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-006887 CA-IMP-6887	Prehistoric	IVC Archaeological Field School	1993	Lithic tool and debitage scatter, including basalt, rhyolite, porphyry, and quartz.
P-13-008215 CA-IMP-7785 CW-1	Prehistoric	A. Apple, R. Nagle, M. Wade, N. Swidler	1982 1983	Lithic tool and debitage scatter, including a quartzite handstone and quartzite projectile point (collected), and ceramic sherds (Tizon and buffware).
P-13-008318 CA-IMP-7813/H CW-1	Multi-component	P. de Barros	2000	Prehistoric component is a lithic scatter (disturbed), with debitage, a milling slab, cores, Tumco Buff pottery sherds, and rabbit bone. Historic component is a small can scatter (early-late 20th century) and faunal bones.
P-13-008391 CA-IMP-7868H PF-ASM-3	Historic	S. Andrews	2000	Debris scatter consisting of bottle glass, ceramics, cans, and rubber (ca. 1940s-1950s).
P-13-008861 CA-IMP-8281 6730-1	Prehistoric	S. Andrews	2004	Ceramic scatter/pot drop of Tumco buff sherds, with indication of further buried sherds.
P-13-009202 CA-IMP-8426 BLM-004	Prehistoric	K. Ahmet, S. Bholat, N. Howell, S. Hale, J. Vadala	2007	Diffused rock feature, with surface charcoal flecks indicating it was later used as modern campfire.
P-13-009203 CA-IMP-8427 BLM-005	Prehistoric	K. Ahmet, S. Bholat, N. Howell, S. Hale, J. Vadala	2007	Lithic debitage and tool scatter, ceramic sherds, and three dispersed rock features.
P-13-009206 CA-IMP-8430 BLM-008	Prehistoric	K. Ahmet, S. Bholat, N. Howell, S. Hale, J. Vadala	2007	Lithic scatter of one flake, one core, two tools, and a ceramic sherd scatter/pot drop.
P-13-009473 CA-IMP-8590H OC-S-99	Historic	N. Brodie, J. Aguilar, A. Pigniolo	2007	Railroad associated debris scatter, including two train rails, slag, and a bottle fragment. Other possible historic debris is mixed with more recent trash.
P-13-009474 CA-IMP-8591 OC-S-100	Prehistoric	N. Brodie, J. Aguilar, A. Pigniolo	2007	Ceramic scatter of at least five Salton brownware body sherds.
P-13-009880 CA-IMP-8821H Fox Glove Canal	Historic	SWCA	2007	Segments of the 9-mile long Foxglove Canal, a concrete-lined irrigation canal and culverts, built ca. 1912 (modified in the 1960s).
		URS	2009	
		AECOM	2011	
		S. Davis	2011	
		H. Thomson	2011	
P-13-009687 CA-IMP-8706H Other - D2-S-252	Historic	H. Thomson, R. Anderson, P. K. Sharp-Garcia, L. Carrier	2006	Debris scatter of three cans.
P-13-010000 CA-IMP-8902H JF-008	Historic	URS	2008	Debris scatter (1930s-1950s), consisting of bottle glass, cans, wire nails, and a bicycle tire pump.
		D. Barklow	2009	
P-13-010004 CA-IMP-8906 JFB-012	Prehistoric	URS	2008	Lithic scatter, including debitage, three cores, and a hammerstone.
		R. Nixon	2009	
P-13-010008 CA-IMP-8910H RAN-005	Historic	URS	2008	US GLO survey benchmark (1912), and a tobacco tin.
		R. Nixon	2009	

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-010009 CA-IMP-8911H RAN-006	Historic	URS D. Barklow, K. McLean, V. Parsick	2008 2009	Debris scatter (1940s-1950s) with one locus, consisting of cans, bottle glass, and a braided metal cable.
P-13-010012 CA-IMP-8914 RAN-008	Multi-component	URS R. Nixon	2008 2009	Prehistoric component consists of two Tizon brownware ceramic sherds. Historic component is a US GLO survey benchmark, undated, and three modern lath stakes.
P-13-010013 CA-IMP-8915 RAN-009	Historic	URS R. Nixon	2008 2009	Debris scatter (1940s-1950s) comprised of cans, bottle and jar glass, one spent bullet casing, and propane can.
P-13-010015 CA-IMP-8917 RAN-011	Multi-component	URS R. Nixon	2008 2009	Prehistoric component is three cores and a hammerstone. Historic component is a small debris scatter (1930s-1950s) of cans and a bottle base.
P-13-010016 CA-IMP-8918 RAN-012	Multi-component	URS R. Nixon	2008 2009	Prehistoric component is a large lithic scatter of debitage, cores, and tested cobbles, three loci, six rock cluster and rock pile features, and Colorado buff ceramic sherds. Historic component is a small debris scatter of cans, bottle glass, a mammal bone, and a bullet casing.
P-13-010020 CA-IMP-8922 RAN-019	Historic	URS R. Nixon	2008 2009	Debris scatter (1900-1950s) with two loci, milk bottle and other bottle glass, ceramics, cans, insulators, auto parts, a shoe sole.
P-13-010021 CA-IMP-8923 RAN-020	Historic	URS D. Barklow	2008 2009	Debris scatter of almost 600 artifacts, two loci, consisting of bottle and jar glass, numerous plate glass fragments, ceramics, miscellaneous metal, and two shoes.
P-13-010067 CA-IMP-8970 EBR-304	Prehistoric	E. Roberts URS	2008 2008	Lithic and ceramic scatter, consisting of three flakes and a hammerstone, and Tizon and Colorado Buffware sherds.
P-13-010071 CA-IMP-8974 JF-026	Prehistoric	J. Fariello URS	2008 2008	Lithic scatter including debitage, cores, hammerstones, other groundstone, a side-notched projectile point, three hearth/fire-affected rock features, and ceramic sherds.
P-13-011472 CA-IMP-10389 CJA-S2-007	Prehistoric	C. Albush	2009	Ceramic scatter of brownware and buffware sherds and one quartz core.
P-13-011476 CA-IMP-10393 CJA-S2-017	Prehistoric	C. Albush	2009	Lithic scatter of obsidian debitage, one core, one biface, and one projectile point.
P-13-011528 CA-IMP-10441 JFB-004	Historic	R. Nixon, B. Gothar, T. Sowles	2009	US GLO benchmark and associated rock clusters, wooden lath stakes, and wire (1900-1950s).
P-13-011530 CA-IMP-10443 JFB-010	Multi-component	R. Nixon, B. Gothar, T. Sowles	2009	Prehistoric component is a lithic scatter of six flakes and a hammerstone. Historic component is an undated brass cap survey point marker.
P-13-011531 CA-IMP-010444 JFB-011	Historic	R. Nixon	2009	Debris scatter (1950s+) of bottle glass, cans, an insulator, and a railroad spike.
P-13-011540 CA-IMP-10453 JM-017	Prehistoric	C. Albush	2009	Lithic scatter with five loci, including debitage, cores, tested cobbles, and hammerstones.
P-13-011541 CA-IMP-10454 JM-020	Multi-component	C. Albush	2009	Prehistoric component is a lithic scatter with five loci, consisting of cores, hammerstones, and a tested cobble. The historic component is a scatter of one broken jar and a can (1903-1958).

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-011543 CA-IMP-10456 JM-023	Prehistoric	C. Albush	2009	Lithic scatter of debitage, bifaces, performs, and cores.
P-13-011545 CA-IMP-10458 JM-027	Prehistoric	C. Albush	2009	Lithic scatter with seven loci, consisting of debitage, cores, tested cobbles, and a hammerstone.
P-13-011546 CA-IMP-10459 JM-028	Prehistoric	C. Albush	2009	Small lithic scatter of debitage, one core, one flaked tool, and a hammerstone.
P-13-011569 CA-IMP-10482 JMR-021	Prehistoric	P. Meadville	2009	Prehistoric lithic and ceramic scatter, consisting of one flake and four buffware sherds.
P-13-011588 CA-IMP-10500 RAN-017	Multi-component	P. Meadville	2009	Prehistoric component consists of six green metavolcanic flakes. Historic component is a debris scatter of approximately 6,100 artifacts, including bottle glass, ceramics, cans, nails and structural materials, and a large quantity of miscellaneous metal.
P-13-011620 CA-IMP-10532 RAN-S2-005	Prehistoric	R. Nixon	2009	Lithic scatter with three loci, consisting of debitage, a core, edge-modified flake, and hammerstones.
P-13-011759 CA-IMP-010581 DRK-115	Prehistoric	D. Kay	2008	Possible deflated hearth feature with associated Tizon brownware ceramic sherd.
P-13-011778 CA-IMP-10600 GCT-001	Prehistoric	G. Tucker, Jr.	2008	Lithic and ceramic scatter with four loci, including debitage, handstones and pestles, cores, tested cobbles , buffware and Tizon brown ceramic sherds, a deflated hearth feature, and a rock cluster.
P-13-011781 CA-IMP-10603 GCT-004	Prehistoric	G. Tucker, Jr.	2008	Lithic and ceramic scatter, consisting of three flakes, one core, and a Colorado Buffware sherd.
P-13-011782 CA-IMP-10604 GCT-005	Prehistoric	G. Tucker, Jr.	2008	Lithic and ceramic scatter, consisting of debitage, a tested cobble, a chopper, Tizon brown and Colorado buff ceramic sherds, and a deflated hearth feature.
P-13-011783 CA-IMP-10605 GCT-007	Prehistoric	G. Tucker, Jr.	2008	Lithic and ceramic scatter with three loci, including debitage, a core, handstone and milling slab fragments, and over 200 Tizon brown and buff ceramic sherds, one human cremation feature with bone fragments, and nine deflated hearth features.
P-13-011784 CA-IMP-10606 GCT-009	Prehistoric	J. Fariello	2008	Lithic and ceramic scatter, including debitage, tested cobbles, a milling slab, handstones, over 50 Tizon brown and Colorado buff sherds, and two hearth features.
		G. Tucker, Jr.	2008	
P-13-011785 CA-IMP-10607 GCT-010	Prehistoric	G. Tucker, Jr.	2008	Scatter of 16 Colorado buff and one Tizon brown ceramic sherd, and one handstone.
P-13-011786 CA-IMP-10608 GCT-011	Prehistoric	G. Tucker, Jr.	2008	Scatter of ten Colorado buff and two Tizon brown ceramic sherds.
P-13-011788 CA-IMP-10610 JF-010	Historic	J. Fariello	2008	Debris scatter (1900s-1940s), consisting of cans and one cut cow bone.
P-13-011789 CA-IMP-10611 JF-012	Historic	J. Fariello	2008	Debris scatter (1900s-1940s) of mostly half-buried cans.
P-13-011791 JF-016	Historic	J. Sahagun	2014	US GLO bronze cap survey marker (1912), and a debris scatter of glass, ceramics, and cans; site impacted by heavy off-highway vehicle use.
		J. Fariello	2008	

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-011802 CA-IMP-10622 JMK-001A	Prehistoric	J. Fariello	2008	Potential oven/hearth feature and a hammerstone.
P-13-011805 CA-IMP-010625 JMK-003A	Historic	J. Fariello	2008	Scatter of historic rocket launcher pod and rocket casings (minus warhead).
P-13-011806 CA-IMP-10626 JMK-004	Prehistoric	J. Fariello	2008	Lithic scatter of debitage and three cores, and one Colorado buff ceramic sherd.
P-13-011807 CA-IMP-10627 JMK-005	Prehistoric	J. Fariello	2008	Lithic and ceramic scatter including debitage, tools, cores, groundstone, over 275 brownware sherds, six incised buff sherds, and two roasting oven features.
P-13-011808 CA-IMP-10628 JMK-006	Prehistoric	J. Fariello	2008	Lithic scatter of six flakes, quartzite, metavolcanic, and basalt.
P-13-011810 CA-IMP-10630 JMK-008	Prehistoric	J. Fariello	2008	Lithic and ceramic scatter of debitage, milling slab fragments, and brownware sherds.
P-13-011811 CA-IMP-010631 JMK-014	Multi-component	J. Fariello	2008	Prehistoric component consists of a lithic and ceramic scatter including debitage, cores, handstones, hammerstones, scrapers, edge-modified flakes, tested cobbles, and five buffware and brownware ceramic sherds, and four hearth features. Historic component is a debris scatter (1880-1930s) comprised of four loci, including bottle glass, industrial or possible railroad related artifacts (scrap, hardware, steel plates, coal slag), and 400 fragments of saw cut and burnt faunal bone.
P-13-011836 CA-IMP-10656 RAN-049	Historic	C. Albush	2009	Debris deposit (early 1900s) of ten cans and a ceramic cup.
P-13-012393 CA-IMP-11008 PF-ASM-2	Historic	S. Andrews	2000	Debris scatter (1940s/1950s) of bottle glass and over 100 cans.
P-13-012697 CA-IMP-11151 RAN-048	Prehistoric	R. Nixon	2008	Sparse lithic scatter of debitage and a tested cobble.
P-13-012699 CA-IMP-11153 JMK-010	Prehistoric	J. Fariello	2008	Sparse lithic and ceramic scatter of 10 flakes, one core, and one Colorado Buffware sherd.
P-13-013043 CA-IMP-11402 NAT-S-51	Historic	J. Roy	2007	Segment of a concrete agricultural canal (post-1945), nearly filled with sand and gravel.
P-13-013044 CA-IMP-11403 NAT-S-52	Historic	J. Roy	2007	Segment of a concrete agricultural canal (post-1945), nearly filled with sand.
P-13-013125 CA-IMP-11436 IID-S-001	Multi-component	C. Bowden-Renna, T. Cooley, W. Glenny	2009	Prehistoric component is a lithic debitage and petrified wood secondary deposit; “recently flaked” obsidian was observed. A 1930s can and 1941 USGS survey marker were also noted, but the site was not recorded as Multi-component. The site was relocated in 2015, and found to be mixed with modern shotgun shells. (Bowden-Renna and McGinnis mention a 2007 recording, but record not present).
		D. Brunzell, M. van Rensselear	2015	
P-13-014652 CA-IMP-12254 IID-S-CBR-1	---	---	---	Mapped, but no record present at SCIC.

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-014897 CA-IMP-12423	Historic	C. Simmons, C. McCollum, J. Sahagun	2014	Debris scatter of fifteen cans (post-1945), heavily impacted by off-highway vehicles.
P-13-014898 CA-IMP-12424H	Historic	C. Simmons, C. McCollum, J. Sahagun	2014	Debris scatter comprising cans, a bed frame, and bed springs (post-1945).
P-13-014899 CA-IMP-12425	Historic	C. Simmons, C. McCollum, J. Sahagun	2014	Concrete road segment, measuring 79 x 15 feet, possibly a segment of historic period Highway 80.
P-13-014900 CA-IMP-12426	Multi-component	C. Simmons, C. McCollum, J. Sahagun	2014	Prehistoric component is one handstone fragment with striations. Historic component is a debris scatter of bottle glass and cans (post-1945).
P-13-014901 CA-IMP-12427	Historic	C. Simmons, C. McCollum, J. Sahagun	2014	Debris scatter consisting of bottle glass, cans, and several chunks of asphalt (post-1945).
P-13-014902 CA-IMP-12428	Historic	C. Simmons, C. McCollum, J. Sahagun	2014	Debris scatter of cans (post-1945), heavily impacted by off-highway vehicles.
P-13-014961 CA-IMP-12445	Prehistoric	D. Brunzell, M. van Rensselear	2015	Low density scatter of one andesite core, one andesite reduction flake, fire-affected rock, two ceramic sherds, and two fish bone fragments.
Isolated Finds Outside the Project APE and within a 0.25-Mile Radius				
P-13-001425 CA-IMP-1425-I	Prehistoric	McI	1976	Potsherd isolate, buff inside/red outside.
P-13-002352 CA-IMP-2352-I	Prehistoric	J. Johnson	1977	Isolate green porphyry scraper.
P-13-002353 CA-IMP-2353-I	Prehistoric	J. Johnson	1977	Isolate green porphyry scraper.
P-13-002357 CA-IMP-2357-I	Prehistoric	H. Pritchett	1977	Isolate schist hammerstone.
P-13-002374 CA-IMP-2374-I	Prehistoric	J. von Werlhof	1977	One dark green porphyry bulbous flake scraper and a possible “anvil” boulder.
P-13-008212 CW-Iso-2	Prehistoric	A. Apple, R. Nagle, M. Wade, N. Swidler	1982	Isolate porphyritic debitage.
P-13-008213 CW-Iso-3	Prehistoric	A. Apple, R. Nagle, M. Wade, N. Swidler	1982	Isolate porphyritic debitage.
P-13-008214 CW-Iso-4	Prehistoric	A. Apple, R. Nagle, M. Wade, N. Swidler	1982	Isolate porphyritic debitage.
P-13-009179 BLM-1002-I	Prehistoric	K. Ahmet, S. Bholat, N. Howell, S. Hale, J. Vadala	2007	Isolate fine-grained basalt core.
P-13-009221 BLM-1017-I	Prehistoric	K. Ahmet, S. Bholat	2007	Isolate of two porphyry secondary flakes.
P-13-009222 BLM-1018-I	Historic	K. Ahmet, S. Bholat	2007	Historic isolate glass insulator cap.
P-13-009472 CA-IMP-8589 OC-S-98	Prehistoric	N. Brodie, J. Aguilar, A. Pigniolo	2007	Single pot drop consisting of over 15 Salton brownware body sherds.
P-13-009475 OC-I-68	Prehistoric	N. Brodie, J. Aguilar, A. Pigniolo	2007	Isolate Salton brownware ceramic body fragment.
P-13-009538 BLM-1001-I	Prehistoric	K. Ahmet, S. Bholat, N. Howell, S. Hale, J. Vadala	2007	Isolate multi-directional basalt core and one Colorado buff ceramic sherd.

Resource Designation(s)	Period	Author(s)	Date	Description
P-13-009539 DP-I-044	Prehistoric	N. Doose, W. Welsh, J. Huval, M. Werle, T. Osuna	2007	Two isolate pieces of debitage; not relocated in 2010.
		C. Bowden-Renna	2010	
P-13-009540 DP-I-045	Prehistoric	N. Doose, W. Welsh, J. Huval, M. Werle, T. Osuna	2007	Single isolate debitage; not relocated in 2010.
		C. Bowden-Renna	2010	
P-13-009589 DP-I-043	Prehistoric	N. Doose, W. Welsh, J. Huval, M. Werle, T. Osuna	2007	Isolate of two buffware pottery sherds; not relocated in 2015.
		D. Brunzell, M. van Rensselear	2015	
P-13-009728 CA-IMP-8729 D3-S-57	Prehistoric	L. Davidson, J. Roy, H. Thompson	2007	Isolate black porphyritic tertiary flake.
P-13-009929 JFB-004-I	Historic	URS	2008	Brass US GLO benchmark (1912).
P-13-011719 JMR-023-I	Prehistoric	J. Reid	2008	Isolate Tizon brownware ceramic sherd.
P-13-011723 PRM-S2-007-I	Prehistoric	P. Meadville	2009	Isolate of two buffware ceramic sherds.
P-13-011725 RAN-003-I	Prehistoric	R. Nixon	2008	Isolate weathered metavolcanic flake.
P-13-011842 DRK-135-I	Prehistoric	D. Kay	2008	Two isolate Tizon brownware ceramic sherds.
P-13-011848 JF-004-I	Historic	J. Fariello	2008	Isolate crown top bottle finish (1895-1920s).
P-13-011850 JF-013-I	Prehistoric	J. Fariello	2008	Isolate granite handstone.
P-13-011851 JF-014-I	Prehistoric	J. Fariello	2008	Isolate ceramic sherd.
P-13-011852 JF-020-I	Prehistoric	J. Fariello	2008	Two isolate chert flakes.
P-13-012969 NAT-I-30	Prehistoric	R. Davidson, J. Roy, H. Thompson	2007	Isolate Salton buffware ceramic sherd.
P-13-013122 IID-I-31	Prehistoric	C. Bowden-Renna, P. McGinnis	2010	Isolate porphyritic, black, metavolcanic flake; not relocated in 2015 (Bowden-Renna and McGinnis mention a 2007 recording, but record not present at SCIC).
		D. Brunzell, M. van Rensselear	2015	
P-13-013123 IID-I-32	Prehistoric	C. Bowden-Renna, P. McGinnis	2010	Isolate weathered buffware ceramic sherd, blackened interior; not relocated in 2015 (Bowden-Renna and McGinnis mention a 2007 recording, but record not present at SCIC).
		D. Brunzell, M. van Rensselear	2015	
P-13-013124 IID-I-33	Prehistoric	C. Bowden-Renna, P. McGinnis	2010	Isolate blue/gray porphyritic, metavolcanic flake; not relocated in 2015 (Bowden-Renna and McGinnis mention a 2007 recording, but record not present at SCIC).
		D. Brunzell, M. van Rensselear	2015	

Note: Unless otherwise cited within the text, bibliographic information for the cultural resource records listed above is not replicated in Section 8.0 References.

Three of the cultural resources previously recorded within the Project APE are spatially associated with the Plaster City Quarry and/or the proposed waterline/powerline that bridges the quarry and proposed Well No. 3. These resources include the Plaster City Quarry itself, which encompasses a small u-shaped historic period stone structure with debris (USG-01 or Locus 1); the Plaster City Railroad (P-13-008139); and a small prehistoric scatter of "Yuman Desert ware" (P-13-000001) that was first documented in 1950. The remaining cultural resources previously recorded within the Project APE were noted in association with the proposed waterline between Ocotillo and Plaster City and the alternative waterline between Plaster City and the Westside Main Canal. Many of these resources, including the individually recorded concrete survey markers and most of the isolated finds, were recorded to the east of the Plaster City Plant and west of the Westside Main Canal. This area coincided with the ancient extents of Lake Cahuilla, thus a relatively high number of prehistoric resources would be anticipated.

The remaining resources noted along the proposed waterline or alternative waterline consist overwhelmingly of prehistoric ceramic or flaked stone scatters or historic period debris scatters (*see* Appendix A). The most expansive of these is P-13-000269, a prehistoric site with flaked stone scatters, groundstone, ceramics, at least one hearth feature, and one recorded cremation that extends across multiple sections on the USGS 7.5-minute Plaster City topographic map. It was originally documented as seven separate resources by Ackers, Avels, and Collins in 1976 but as of 2016 encompasses at least 50 sites or loci that were recorded over the past four decades. Prior recordings of P-13-000269 indicate that most of the site materials and features are concentrated to the south of the San Diego and Arizona Eastern Railroad (P-13-009302) and south of the Project APE. This resource and others encountered during the Class III pedestrian inventory survey are discussed further in Section 6.0, while the survey and recording methodology that was used during the field effort is detailed in the next section.

5.0 SURVEY AND RECORDING METHODOLOGY

5.1 CLASS III PEDESTRIAN INVENTORY SURVEY METHODS

The Class III pedestrian inventory survey of the Project APE was carried out by qualified personnel familiar with the prehistoric and historic period archaeology of desert settings in California. Field personnel comprised one team of two to three professional archaeologists led by a field director. Survey methods consisted of either intensive or spot-check survey. The Class III pedestrian inventory survey was performed using systematic transects in which team members were spaced no more than 10-15 meters apart in most areas and up to 30 meters apart in wide washes and on gypsum slopes. Transect spacing was reduced to 3-5 meters within previously identified cultural resource boundaries. A spot-check survey was conducted in areas that were examined in by URS (2010) in support of the Imperial Valley Solar Project. Spot-check areas included portions of the proposed waterline between Ocotillo and Plaster City as well as the full extents of the alternative waterline between Plaster City and the Westside Main Canal. No artifacts were collected and no subsurface testing or excavation was undertaken. The main objective of the Class III pedestrian inventory survey was to identify previously recorded cultural resources, discover previously undocumented cultural resources, and note the potential of surveyed areas to contain buried cultural deposits.

The Class III inventory was conducted between April 17 and May 19, 2018 by personnel from Pacific Legacy, Inc. Will Shapiro, MA, served as the field director and Mary O'Neill, BA, served as Supervisor. Crew members included Jack Sprague, BA, during the April 17-26 field rotation, and Matthew Cappetta, BA, during the May 1-10 field rotation. John Holson, MA/RPA, served as the Principal Investigator for this Project and Lisa Holm, PhD, served as the Project Manager. Using data derived from GIS shapefiles and AutoCAD drawings provided by Lilburn Corporation as well as data provided by the SCIC, Lisa Holm generated GPS files and Class III inventory maps to facilitate the field effort. Lisa Holm, Mary O’Neill, Shanna Streich, BA, Alexandra McCleary, MA, and Kylie Tuitavuki, BA, all contributed to the production of this CRR and the 2018 cultural resource records included in Appendix C.

5.2 CULTURAL RESOURCE RECORDING METHODS

Prior to the start of the Class III pedestrian inventory survey, a half-day orientation was held at the Plaster City Quarry to provide field personnel with a safety orientation, biological awareness training, communications equipment, escort protocols, notification of evacuation areas, and a tour of all access roads and access points within the quarry area. In addition, Pacific Legacy staff reviewed background information on the types of cultural resources anticipated within the Project APE, site recording procedures, GPS receiver and data dictionary use, safety issues and protocols outlined in a project-specific Activity Hazard Analysis (AHA) document, and other pertinent information prior to the start of the survey. Field personnel were supplied with all available records for cultural resources previously recorded within the Project APE as well as copies of relevant historic period maps. Personnel also were provided with information regarding the identification and anticipated age range of prehistoric and historic period cultural resources within the Project APE. Katherine Crosmer, BLM Archaeologist with the El Centro field office, met twice with Pacific Legacy field personnel during the Class III inventory effort and received regular updates on the progress of the investigation.

Field personnel were provided with location information on Trimble Geo 7X GPS receivers and on field inventory maps for previously recorded cultural resources within the Project APE. Every effort was made to relocate document these known resource. If a resource could not be relocated, field personnel examined potential nearby locations within or adjacent to the Project APE based on the resource description and maps from the original records. When a new cultural resource was discovered, field personnel conducted a careful inspection of the vicinity, assigned the resource a temporary number, plotted the resource's location using a Trimble Geo 7x GPS receiver and topographic maps, and documented the nature and extent of the resource. All prehistoric and historic period cultural resources were fully documented as they were encountered.

Field recording efforts were limited to the Project APE. There were several instances, however, in which cultural resources, particularly linear features, extended beyond the Project APE (e.g., highways, railroads) but were clearly evident from true-color orthophotographs or from Project engineering data. The physical characteristics and any features associated with these resources were therefore documented and described as they intersected the Project APE but noted on location maps as they paralleled or extended beyond it. Resources recorded using this methodology included the narrow-gauge Plaster City Railroad (P-13-008139) that extends between the Plaster City Quarry and the Plaster City Plant (P-13-009303); current and former alignments of Highway 80 (P-13-008418); and the San Diego and Arizona Eastern Railroad (P-13-009302) alignment. The segment of the Plaster City Railroad (P-13-008139) spanning the quarry and proposed Well No. 3 was recorded in detail in the field, while the portion of the railroad that extends south outside of the Project APE to the Plaster City Plant was not subject to pedestrian survey.

Twenty-two previously recorded cultural resources could not be relocated during the 2018 Class III pedestrian inventory and spot-check survey, and several were found to have been mis-plotted in the ArcGIS shapefiles provided by the SCIC. For instance, one was a prehistoric scatter of lithics, ceramics, and charcoal (P-13-00321) that was first documented in 1974. The site was plotted to the south of the San Diego and Arizona Eastern Railroad tracks in the Southeast ¼ of the Northwest ¼ of the Southeast ¼ of Section 10 outside of the Project APE. In 2007, the site was revisited and found to lie both north and south of the railroad tracks; it was also associated with a cremation site (P-13-000360) to the south of the railroad tracks. The resource was not relocated north of the railroad tracks in 2018 and is likely located south of the railroad tracks as originally plotted in 1974. Another resource that was found to have been mis-plotted was a historic period glass and metal debris deposit (P-13-004193) that was originally documented in 1979. The site was plotted in the Northwest ¼ of the Southwest ¼ of the Northwest ¼ of Section 10 outside of the Project APE. The resource was not relocated during this study but was originally plotted in 1979 approximately 1,000 feet to the north of the position mapped by the SCIC. The third resource was a prehistoric lithic scatter (P-13-004340) that was originally documented in 1980. It was plotted approximately 2.5 miles to the south of the location portrayed in ArcGIS shapefiles provided by the SCIC. The total number of cultural resources not relocated included 14 archaeological sites or built environment resources and eight isolated finds. These resources are discussed further in Section 6.0.

For previously recorded cultural resources that were relocated, field personnel noted the condition of the resource, documented any materials not previously observed, created new site and location maps as necessary, and updated other pertinent information on Department of Parks and Recreation (DPR) Forms 523. For previously recorded cultural resources within the spot-check survey areas, field personnel focused on the locations of known cultural resources to verify the boundaries of those resources with respect to the Project APE and to assess the adequacy of prior survey efforts. The current condition of resources within the spot-check survey areas also was assessed, and any materials not observed during prior recordings were documented. If the resource extended beyond the Project APE, only the portion of the resource within the APE was subject to in-depth re-examination, and any undefined cultural resource boundaries were noted.

5.3 TERRAIN AND OTHER ACCESS LIMITATIONS

The Plaster City Quarry is dominated by active quarry areas and largely undisturbed gypsum slopes that will be the focus of future mining activities. The Project APE for the proposed waterline/powerline between the main quarry area and Well No. 3 is marked by the existing alignment of the narrow-gauge Plaster City Railroad (P-13-008139) and its associated access or maintenance road. Areas along the proposed waterline between Ocotillo and Plaster City and the alternative waterline between Plaster City and the Westside Main Canal are largely undeveloped, though the Plaster City Plant (P-13-009303), Highway 80 (P-13-008418), and the San Diego and Arizona Eastern Railroad (P-13-009302) are all prominent infrastructural features.

The Plaster City Quarry area is dominated by Creosote Bush Scrub and Desert Dry Wash vegetation communities, which are evident in the wash channels and on the surrounding hillsides, though the quarry's gypsum outcrops are nearly devoid of vegetation, marked only by the occasional pygmy cedar. The narrow-gauge railroad alignment and proposed waterline/powerline is marked by creosote bush series and creosote bush-white bursage series vegetation with occasional areas of mesquite, while the APE spanning Ocotillo and the Westside Main Canal passes through desert shrubland. Few patches of dense vegetation are present within the Project APE and are mostly limited to narrow corridors along existing washes or drainages. Vegetation posed no impediment to ground surface visibility during the Class III pedestrian inventory survey. Many areas along the slopes and in the central portion of the quarry featured recent bulldozer tracks and/or push piles from core testing activities. The far northern end of the Project APE, areas north of the quarry proper, and portions of the proposed waterline and waterline alternative alignments at the southern end of the Project APE had been heavily disturbed by off-highway vehicle (OHV) activity, which appeared to have impacted the desert vegetation.

The terrain within the Plaster City Quarry was highly variable, with slopes ranging from 0 to over 30 degrees. The gypsum domes and adjacent mountains were typically characterized slopes of 30 degrees or more, while many of the quarry washes, draws, ravines, and canyons were marked by vertical cliff-cuts, undercut cliff faces, and steep walls that provided no access. In contrast, areas of relatively flat terrain were encountered within the valley and alluvial fans of the quarry as well as all along the proposed waterline and waterline alternative alignments between Ocotillo and the Westside Main Canal. In general, the northern portions of the Project APE within the quarry and along the proposed waterline/powerline were characterized by areas of greater relief and terrain variability while areas near Ocotillo, Plaster City, and the

Westside Main Canal tended to be more level and easily accessible. In areas of extreme relief, field personnel examined all safely accessible portions of the Project APE to the greatest extent feasible. By necessity, field personnel used irregular transects in certain areas but essentially achieved coverage of all areas within the APE that might be expected to feature prehistoric or historic period cultural resources.

Certain areas within the quarry were not accessible due to safety concerns. These areas included the active quarry zone and areas that had been previously quarried; deep gorge-like ravines, draws, or washes; steep-sided and deep slot canyons; steep gypsum mountains, domes, and uplifts with more than a 30 degree slope; and areas of extreme or unstable terrain. All areas that could not be surveyed were plotted and mapped on detailed survey maps and submitted daily to Pacific Legacy's Berkeley Office. Areas that were inaccessible during the Class III pedestrian inventory survey are depicted in Appendix B. While vegetation and access issues posed little or no barrier to an examination of the Project APE, topographic constraints posed severe challenges and proved to be of greatest concern. Of the 1,981 acres that make up the Project APE, which included approximately 1,464 acres targeted for intensive survey and 517 acres scheduled spot-check survey, roughly 585 acres associated with the quarry and proposed waterline/powerline (over 29% of the total area) were inaccessible due to safety reasons.

5.4 CULTURAL RESOURCE DOCUMENTATION

All cultural resources encountered during the Class III pedestrian inventory survey were documented on DPR Forms 523 and on supplemental records in keeping with procedures identified in the *Instructions for Recording Historical Resources* (California Office of Historic Preservation 1995). At a minimum, resource documentation was completed on DPR Form 523(a) (a Primary form) and DPR Form 523(j) (a 1:24,000-scale map depicting the cultural resource location). Sites were defined as one or more archaeological features and/or as three or more artifacts within a 15-meter radius. Isolated finds were defined as a single artifact or two artifacts located less than 15 meters apart (e.g., a single projectile point, an assayed cobble, two historic period bottle bases, etc.), or as an isolated, discrete feature within the landscape (e.g., a rock cairn, a benchmark, or a well head).

Isolated finds were recorded via GPS receiver, photographed, and briefly described. Prehistoric and historic period sites and structures were recorded via GPS receiver, photographed, described, documented on a site sketch map drawn to an appropriate scale, and supplemented with additional forms as necessary. Sketch maps were prepared that depicted the resource boundary; its datum location, if applicable; its constituent elements; and its relationship to other resources or natural features in the vicinity. Sketch maps were rendered against true color orthophotographs to better depict their surrounding environment. Trimble Geo 7x GPS receivers were used to record both location and attribute data to facilitate reporting and to serve as a backup to analog records generated in the field. These data were downloaded and corrected using GPS Pathfinder Office and converted into ArcGIS shapefiles. All sites were photographed to capture their landscape setting, internal features, and diagnostic artifacts. All photographs were logged using image numbers that included information on photograph orientation, content, and date.

In addition to the standard DPR Forms 523, additional data sheets were included as necessary to document each cultural resource. Diagnostic and unusual, rare, or unique artifacts were assigned artifact numbers and recorded via GPS and on site sketch maps. The potential for buried cultural deposits was noted through an inspection of natural or artificial exposures of soil stratigraphy (e.g., vertical soil exposures, areas of bioturbation, etc.). Daily field notes documenting the Class III pedestrian inventory survey were kept on standardized forms and submitted daily to Pacific Legacy's Berkeley Office. DPR Forms 523 were regularly checked by the field director for completeness and consistency.

6.0 CLASS III PEDESTRIAN INVENTORY SURVEY RESULTS

6.1 SURVEY COVERAGE

All areas within the Project APE were targeted for investigation during the Class III pedestrian inventory and spot-check survey conducted by Pacific Legacy personnel in April and May 2018. As was noted in Section 1.2, the APE includes all proposed mining areas and all jurisdictional waters within the Plaster City Quarry, the proposed right-of-way for an approximate 3.45-mile long waterline/powerline that bridges the main quarry area and Well No. 3, an 8.7-mile waterline that spans facilities in Ocotillo and Plaster City, and a 5-mile waterline between Plaster City and the Westside Main Canal. Approximately 517 acres within the Project APE for the proposed waterline or alternative waterline were examined in 2008 by URS Corporation (URS 2010) and were targeted for spot-check survey only, while the remaining 1,464 acres that make up the APE were the focus of the Class III pedestrian inventory survey. Cumulatively, these areas total 1,981 acres. Approximately 539 acres consist of BLM lands, 17 acres are California State lands, and the remaining 1,425 acres are private lands. Table 6-1 presents the total number of acres within each main portion of the Project APE subject to intensive Class III pedestrian inventory survey versus the total area subject to spot-check survey. Acreage calculations for those areas that remained inaccessible due terrain or safety considerations also are noted.

Table 6-1. Survey Coverage within the Project Area of Potential Effects.

Project APE	Total Acreage	Area Identified for Class III Survey	Area Identified for Spot-Check Survey	Class III Survey Completed	Spot-Check Survey Completed	Inaccessible Area	Total Area Surveyed
Plaster City Quarry	1,201	1,201 (155 BLM) (1,046 Private)	0	632 (102 BLM) (530 Private)	0	569 (53 BLM) (516 Private)	632 (102 BLM) (530 Private)
Proposed Waterline/ Powerline	208	208 (32 BLM) (17 State) (159 Private)	0	192 (32 BLM) (17 State) (143 Private)	0	16 (<1 State) (16 Private)	192 (32 BLM) (17 State) (143 Private)
Proposed Waterline	572	55 (46 BLM) (9 Private)	517 (306 BLM) (211 Private)	55 (46 BLM) (9 Private)	517 (306 BLM) (211 Private)	0	572 (352 BLM) (220 Private)
Total	1,981	1,464 (233 BLM) (17 State) (1,214 Private)	517 (306 BLM) (211 Private)	879 (180 BLM) (17 State) (682 Private)	517 (306 BLM) (211 Private)	585 (53 BLM) (<1 State) (532 Private)	1,396 (486 BLM) (17 State) (893 Private)

Note: Total acreage calculations are provided for each major portion of the Project APE in each column with total acreage by landowner provided in parentheses.

Under Project APE Location, Proposed Waterline refers to the proposed segment between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal.

Totals do not include areas within the Plaster City Quarry that lay outside of the Project APE and did not require Class III pedestrian inventory or spot-check survey.

Inaccessible areas included portions of the Project APE marked by steep or unstable terrain, areas that were fully developed, or areas that had been actively mined.

During the 2018 investigation, 879 acres were subject to intensive Class III pedestrian inventory survey while 517 acres were examined as a part of the spot-check survey of the proposed waterline and alternative waterline to verify the accuracy and adequacy of the 2008 URS investigation. Approximately 585 acres were inaccessible due to topographic or safety constraints. Areas subject to Class III pedestrian inventory survey included 180 acres on BLM lands, 17 acres on California State lands, and 682 acres on privately owned lands. Spot-check survey areas included 306 acres of BLM lands and 211 acres of private lands (*see* Table 6-1). The sections below discuss the cultural resources that were relocated or newly encountered within the Project APE in each of these areas and notes cultural resources that were anticipated within the APE but were not relocated.

6.2 PREVIOUSLY RECORDED CULTURAL RESOURCES

Forty-three previously recorded cultural resources were relocated within the surveyed portions of the Project APE. As documented in 2018, these included three prehistoric archaeological sites; 17 historic period archaeological sites or built environment resources; seven multi-component resources containing prehistoric and historic period materials, including one that subsumed a previously recorded prehistoric resource; and two isolated finds. Thirteen additional resources, all historic period "C" block markers associated with Highway 80 (P-13008418), had been previously recorded as distinct entities with separate California State Primary numbers. These were noted as unchanged during the 2018 field effort but were not re-recorded and would be more correctly characterized as features of P-13008418. Twenty-two resources were not relocated during the 2018 field effort, including 14 archaeological sites or built environment resources and eight isolated finds. Some of these resources have likely been disturbed or destroyed by erosion or development, others were mis-plotted, and several were noted just outside but not within the Project APE.

With the exception of the Plaster City Quarry and Plaster City Railroad (P-13-008139), all of the resources relocated in 2018 were encountered along the proposed waterline between Ocotillo and Plaster City and the alternative waterline between Plaster City and the Westside Main Canal. Table 6-2 presents a summary of all cultural resources that were relocated within the Project APE in 2018, while fuller descriptions of the archaeological sites and built environment resources that were re-recorded are offered below. The 22 resources that were not relocated in 2018 are summarized in Table 6-3. The spatial extents of all of these resources as provided by the SCIC through the Class I archival and records search are presented in Appendix A, and their extents as re-recorded during the 2018 field investigation are illustrated in Appendix B. Appendix C contains full DPR Forms 523 for each of these resources.

Table 6-2. Previously Recorded Cultural Resources Relocated within the Project Area of Potential Effects.

Resource Designation	Site Type	Description	Author	Date	APE Location
Previously Recorded Archaeological Sites or Built Environment Resources – Relocated					
P-13-000269 CA-IMP-269 (Subsumes: CA-IMP-994, CA-IMP-995, CA-IMP-997, CA-IMP-1426, CA-IMP-2443, and CA-IMP-4677)	Prehistoric	Extensive prehistoric site extending across five sections of the Plaster City 7.5-min. quadrangle, consisting of over 50 sites/loci that were recorded beginning in 1976 and subsumed under site CA-IMP-000269 (originally recorded as seven sites by Ackers, Avels, and Collins in 1976) by 2016. The site comprises lithic scatters (noted as "massive") composed of debitage and a wide range of tools (green porphyry, CCS, quartzite, and metavolcanic material) described as "innumerable", including projectile points, scrapers, choppers, cores, hammerstones, drills, knives, milling slab fragments, and cooking stones. Also present are high quantities	O'Neill	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	APE Location
		of buffware and brownware potsherds (many blackened), at least one hearth feature and other possible hearths, and a cremation (Von Werlhof 1976). The individual prehistoric and multi-component sites that fall within the APE were revisited. However, although these resources are inside the boundary of P-13-000269 as recorded by URS Corporation in 2009 and plotted by the South Coastal Information Center, they were not formally documented as part of the larger resource. Therefore, these sites have been updated individually: P-13-000321, P-13-004389, P-13-004391, P-13-010066, P-13-010068, P-13-011165, P-13-011627, P-13-011633, P-13-011635, P-13-017740, P-13-011741, P-13-011793, and P-13-011794. The updated record for P-13-000269 will only summarize the past recording efforts, and confirm which sites were found to be present in the APE.			
P-13-002355 CA-IMP-2355 (Updated)	Prehistoric	Originally recorded as a lithic scatter of six light green porphyry debitage. Only one piece of green debitage was located; at least 12 pieces of CCS debitage and three pottery sherd concentrations were newly identified.	Shapiro, O'Neill, Sprague	2018	Proposed waterline
*P-13-004391 CA-IMP-4391/H (Updated)	Multi-component	Prehistoric component consists of a sparse lithic scatter with debitage, cores, and Tizon brownware and Colorado Buffware sherds. Historic component consists of berms, depressions, coal-clinker stained soil, and a debris scatter (1900s-1920s) of metal, ceramics, and glass vessel fragments, including amethyst glass and cans. The site was relocated and found to be as previously described, although approximately sixteen ceramic sherds and one piece of CCS debitage were found beyond the northeast site boundary. Site boundary was expanded approximately 30 m to the northeast to include the newly identified material.	Shapiro, O'Neill	2018	Proposed waterline
P-13-008139 CA-IMP-7739H Plaster City Railroad Project (Updated)	Historic (Previously Multi-component)	As determined by the site revisit, the previously recorded prehistoric component should be documented as a separate site and removed from this record (which has been updated to Historic only). That component consists of a lithic scatter, groundstone, fire-affected rock, midden, cairns, fish and mammal bone, 300+ potsherds, and a coprolite of unknown date. The previously recorded historic component consists of a portion of the 27-mile narrow gauge US Gypsum Rail Line (which traveled between the mine and plant), locomotives, 11 drainage culverts, a railroad bridge (1922) over Carrizo Wash, and a possible iron flintlock/sidelock. This recording effort documented a 300-foot portion of the railroad line at the north end. Ten features associated with the railroad line were documented (nine maintenance offset tracks; one large culvert with drain pipes aligned horizontally), and a remnant telegraph line along the grade.	Shapiro, O'Neill, Cappetta	2018	Plaster City Quarry; proposed waterline/ powerline

Resource Designation	Site Type	Description	Author	Date	APE Location
P-13-008323 CA-IMP-7816/H (Updated)	Multi-component	Prehistoric component consists of one highly polished bifacial granite handstone. Historic component originally recorded as a historic railroad stop with debris scatter on either side of a Union Pacific Railroad alignment, it was later determined to be a likely temporary campsite along the railroad and adjacent roads, with corrections made to location (McKenna 2007). The historic dump was relocated on both sides of the railroad track, and extends further on the north side of the tracks than was previously documented. The update is for the north side of the tracks only. Prehistoric component not included.	Shapiro, O'Neill	2018	Proposed waterline
P-13-008334 CA-IMP-7834H Westside Main Canal (Updated)	Historic	The Westside Main Canal is an irrigation canal that spans approximately 40 miles through agricultural lands in the Imperial Valley section of Imperial County. The current update documents a 0.25-mile long segment of the irrigation canal at the eastern edge of the proposed waterline, which terminates at the canal.	O'Neill	2018	Proposed waterline
P-13-008418 CA-IMP-7886H Imperial County S80 Evan Hewes Highway US Highway 80 (Updated)	Historic	Portions of Highway 80 (also known as Imperial County S80, the Evan Hewes Highway, SH80, or US State Highway) that fall within Imperial County and extend through Plaster City were built in the 1910s-1920s. Improvements were made in the 1930s as New Deal projects of the Federal Bureau of Public Roads. The full highway extends 2,671 miles from Savannah, Georgia, to San Diego, California. Much of Highway 80 has been subsumed by Interstate 8, but portions of the original alignment are still visible in some locations. The current update documents two discrete parallel sections of Highway 80, one 2,000-foot long portion (north), and one 1,919-foot portion (south. The southern section is presumed to be an earlier single-lane concrete and aggregate section of the current highway. It is situated between the railroad (P-13-009302) and the current highway alignment. Additionally, there are five bridges and three culverts, which all date to 1932. Spare scatters of historic debris also were noted along the highway. Note: There are13 "C" block markers along the highway that have been previously recorded. They include P-13-011637, P-13-011638, P-13-011639, P-13-011640, P-13-011641, P-13-011642, P-13-011643, P-13-011644, P-13-011645, P-13-011646, P-13-011647, P-13-011648, and P-13-011649. These markers were relocated but are features of the road and so were not re-recorded as discrete resources. Also, four historic period debris scatter sites, each with a "C" block marker within their boundaries, are related to this site. They include P-13-011630, P-13-011631, P-13-011635, and P-13-011636.	Shapiro, O'Neill, Cappetta	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	APE Location
P-13-009302 CA-IMP-8489H (Updated)	Historic	Segments of the San Diego and Arizona Eastern Railroad (built 1907-1919), which connected San Diego to El Centro (the connection to Southern Pacific network). The resource includes intact rails and tracks; railroad bridges, including several timber trestle bridges with railroad signs; fences; historic and modern debris scatters. The current record is an update for the portion of the railroad that clips the southern edge of the project area. The railroad continues to function for its original purpose and is in good condition.	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
P-13-009303 Plaster City Plant (Updated)	Historic	Plaster City Plant, built in 1920-1921 by Imperial Gypsum and Oil Corporation (1922-1924), sold to Portland Cement Company (1924-1945), and then to US Gypsum (1945-present), comprises multiple historic and non-historic structures, mostly warehouses and storage containers. The plant was found to be in the same condition as previously recorded, and continues to function as a gypsum processing facility.	Shapiro, O'Neill, Sprague	2018	Proposed waterline
*P-13-010066 CA-IMP-8969H EBR-303 (Updated)	Historic (Previously Multi-component)	Prehistoric component originally recorded as a metavolcanic primary flake, a quartzite primary flake, and three Colorado Buffware potsherds; however, the prehistoric only appears on the Primary record and is not discussed further. Historic component is comprised of two loci of debris scatter, consisting of cans, bottle glass, and faunal bones, all material mostly burnt. Only a sparse scatter of historic debris and the historic loci were identified in the site boundaries. It is uncertain if this is really a multi-component site as no updated sketch was generated with the location and prehistoric material. One piece of pottery was found at the edge of a drop-off to a wash, approximately 10 meters to the southeast out of the project area. No other prehistoric material was observed.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011165 CA-IMP-10171 (Updated)	Prehistoric	Lithic and ceramic scatter, consisting of 30 flakes (quartzite, porphyry, jasper), 14 porphyry cores/fragments, two quartzite cores, three handstones (granite, basalt, quartzite), and 110 potsherds, mostly probable Colorado buff, two with black interior and temper. The survey boundary was found to be accurate, and just extends into the current APE with the southern edge of the site extending underneath a high voltage power line, approximately 15 m north of the edge of the existing Evan Hewes Hwy pavement. Approximately 20 ceramic pieces and 6+ flakes were observed.	Shapiro, O'Neill	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	APE Location
P-13-011626/ P-13-012732 CA-IMP-10538/ CA-IMP-11181/H (Updated)	Multi-component	Prehistoric component consists of 131 artifacts (CCS, quartzite, metavolcanic) in two loci, including debitage, two cores, and two hammerstones, and 94 buffware and 15 brownware ceramic sherds. Historic component consists of 203 artifacts, including bottle glass, cans/tins, and tableware fragments. All loci and some artifacts, as previously recorded, were relocated. The area is continually impacted by erosion and OHV use. Note: Due to their spatial overlap, this site combines two previously distinct resources, mufti-component site P-13-011626 and prehistoric site P-13-012732, into a single resource.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011627 CA-IMP-10539/H (Updated)	Multi-component	Prehistoric component is concentrated in one loci, and consists of four flakes (CCS, metavolcanic), and 27 brownware ceramic sherds. Historic component (date range 1935+) is located in one locus, and consists of 9 cans and 8 glass fragments. The site was relocated, and artifacts were found as previously recorded. The condition appears the same, though there is evidence of erosion and OHV use.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011628 CA-IMP-10540/H (Updated)	Multi-component (Previously Prehistoric)	Originally recorded as a prehistoric site, consisting of a lithic and ceramic scatter, including three loci of debitage, cores, hammerstones, handstone and milling slab fragments, 258 buffware sherds, and a deflated hearth. All three prehistoric loci and artifacts were relocated as documented. The hearth was not relocated. Additionally, historic debris was found to be scattered throughout the site area. The entire site is impacted by erosion and OHV use.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011629 CA-IMP-10541H S2-SLY-25 (Updated)	Historic	Debris scatter of 64 artifacts, consisting of cans, bottle glass, and rubber tire fragments (deposited 1935+). The artifacts were relocated as described. No additional cultural constituents were observed. The area is disturbed by erosion and continued OHV use.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011630 CA-IMP-10542H S2-SLY-26 (Updated)	Historic	Debris scatter of 20 artifacts, consisting of cans, bottle glass, miscellaneous metal, and a rubber mat (deposited 1955+), and a "C" block marker recorded as associated with Highway 80 site P-13-008418. The site was found to be in the same condition as originally recorded, including the "C" block marker.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011631 CA-IMP-10543H S2-SLY-27 (Updated)	Historic	Debris scatter of 20 artifacts, consisting of cans, bottle glass, and a metal ring (deposited 1956+); a dislodged concrete state route marker with beveled edges, impressed "C", and copper plug inset at top (1914-1934); and an isolate basalt flake. This site was been found to be associated with S80 site P-13-008418. All cultural constituents were relocated, excepting one milk glass jar. The right of way marker and site is associated with the Evan Hewes Highway P-13-008418. Continued impacts from erosion and OHV use.	Shapiro, O'Neill	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	APE Location
P-13-011632 CA-IMP-010544H S2-SLY-28 (Updated)	Historic	Debris scatter of 17 artifacts, consisting of cans and bottle glass (deposited 1935-1960s). The site was found to be as previously recorded. A "C" marker is mentioned as present in the earlier record, but was recorded separately as an isolate P-13-011649.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011633 CA-IMP-10545/H S2-SLY-29 (Updated)	Multi-component	Prehistoric component consists of 6 pieces of lithic debitage (metavolcanic, jasper, CCS). Historic component consists of 106 artifacts, comprised of cans, bottle glass, and one metal plate (deposited 1958+). The site appeared as originally documented; all three loci were relocated. Newly identified artifacts consist of: one flake, one pottery fragment, and two bottle glass fragments. The site continues to be impacted by aeolian and alluvial erosion.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011634 CA-IMP-10546H S2-SLY-30 (Updated)	Historic	Debris scatter in two concentrations, consisting of at least 137 artifacts, including bottle glass, cans, box spring remains, and rubber tire fragments (1920s-1950s). The site appears as originally documented. Both loci are still intact although aeolian and alluvial erosion has likely impacted the site, which represents Imperial County S80 Hwy roadside debris.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011635 CA-IMP-10547/H S2-SLY-31 (Updated)	Multi-component	Prehistoric component consists of one basalt tertiary flake and two buffware ceramic sherds. Historic component is a concrete "C" state survey marker with copper plug, and 723 artifacts, including bottle glass, cans, miscellaneous metal, ceramic insulators, and electrical wire (1916-1954+). This site is associated with SH80 site P-13-008418. The isolated prehistoric flake and pottery sherd were not relocated. The debris scatter was relocated and found to be sparse and dispersed along both sides of the abandoned Imperial County S80 highway, south of the current S80 highway. The Row Marker is also a part of the abandoned highway. The site continues to be impacted by erosion and OHV use	Shapiro, O'Neill	2018	Proposed waterline
P-13-011636 CA-IMP-10548H S2-SLY-32 (Updated)	Historic	Concrete "C" state survey marker with copper plug, and debris scatter of 13 artifacts, including cans, a glass tumbler and bottle base. This site has been found to be associated with SH80 site P-13-008418. The site was found to be as previously recorded, with the exception of the sketch map which does not include Evan Hewes Hwy (E-W immediately north of the site), or a high pressure gas utility pipeline that runs NE-SW and passes the sites northernmost extension. The single C-block right-of-way marker is associated with the Evan Hewes Highway (P-13-008418).	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
P-13-011790 CA-IMP-10612H (Updated)	Historic	Debris scatter of 23 artifacts consisting of cans and bottles (1930s-1960s). Only the northern edge of the site extends into the current APE, with the majority of the constituents and can concentration found to be located to the south.	Shapiro, O'Neill	2018d	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	APE Location
P-13-011792 CA-IMP-10613H (Updated)	Historic	Debris scatter consisting of 30 cans and several bottles (1930s-1960s). The site constituents were relocated and the boundaries were found to be accurate. The debris is widely scattered trash associated with the Evan Hewes Hwy.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011801 CA-IMP-10621H (Update)	Historic	Debris scatter comprised of cans, bottle glass, and a single ceramic handle fragment (1920s-1940s). The widely scattered roadside debris was relocated, the boundaries and constituents reflect original recording.	Shapiro, O'Neill	2018	Proposed waterline
P-13-013126 CA-IMP-11437H (Updated)	Historic	Debris scatter beside railroad tracks, consisting of cans, bottle glass, and milled lumber (1885-1930s). Possibly associated with the San Diego and Arizona Eastern Railroad. The debris and tracks were relocated. The debris is likely related to the railroad. The site also overlays previously recorded prehistoric site P-13-009594.	Shapiro, O'Neill	2018	Proposed waterline
Plaster City Quarry (Updated)	Historic	The resource was originally documented in 2002 (Holmes) as being a functioning quarry since 1902, modernized after purchase by US Gypsum in 1946; however, the record was never submitted to the Information Center for P# assignment. The quarry appears as previously described, although the active mining area may now be more extensive. A U-shaped dry-laid stacked stone structure with an interior hearth and a historic period debris scatter was documented within the quarry in 2002 and found to be unchanged in 2018. It contains hinged lid tobacco tins and many condensed milk cans. A dirt road enters the site at the northeast, and bulldozer tracks are present in addition to signs of erosion and target shooting.	Shapiro, O'Neill, Sprague	2018	Plaster City Quarry
Previously Recorded Isolated Finds – Relocated					
P-13-011847 (Updated)	Prehistoric	Isolate chalcedony tertiary flake. Relocated, not updated.	N/A	N/A	Proposed waterline
P-13-013118 (Updated)	Historic	Isolate USGS Survey marker (1941), located on north side of railroad tracks. The marker was found to be as previously recorded. Additionally, another concrete block base is located just to the east, brass cap removed. This isolate is located within previously recorded prehistoric site P-13-009594.	Shapiro, O'Neill	2018	Proposed waterline

Note: *These resources fall within the boundaries of prehistoric site P-13-000269 as plotted by the SCIC. Although it falls within the boundary of site P-13-000269, it was not formally documented as a part of that larger resource. The resource was re-recorded on updated DPR Forms 523 following its last discrete recording effort.
Under APE Location, Proposed Waterline refers to the proposed waterline between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal.

Table 6-3. Previously Recorded Cultural Resources Not Relocated within the Project Area of Potential Effects.

Resource Designation	Site Type	Description	Author	Date	Presumed APE Location
Previously Recorded Sites – Not Relocated					
P-13-000001 CA-IMP-1 (Updated)	Prehistoric	Scatter of Yuma Desert Ware potsherds. Site was not relocated; the area is in an active mining zone and completely disturbed.	Shapiro, O'Neill, Sprague	2018	Plaster City Quarry
*P-13-00321 CA-IMP-321 (Updated)	Prehistoric	Lithic and ceramic scatter consisting of debitage, charcoal, and potsherds, near a cremation site. The site was previously recorded in two locations to the north and south of the railroad. No evidence of the site was found in the Project Area north of the railroad, and areas south of the railroad (outside of the APE) were not revisited.	Shapiro, O'Neill	2018	Proposed waterline
P-13-004193 CA-IMP-4193H (Updated)	Historic	Debris scatter with two loci, consisting of bottle/jar glass, ceramic piece, metal. The site was not relocated; it is likely located to the northeast of the current SCIC plot, at least 1000 feet north of the survey corridor and well beyond the Project APE. In the current location there have been heavy impacts from fiber optic pipeline construction.	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
P-13-004340 CA-IMP-4340 (Updated)	Prehistoric	Sparse lithic scatter with cores. Recordings of P-13-004391 (Fariello 2008; Albush 2009) were mistakenly lumped and identified with this site. P-13-004340 was not relocated, as it appears it has been mis-plotted and is not in Section 10 (field checked) but is likely 2.5 miles to the south as originally documented by Norwood (1980). The site is out of the Project APE.	Shapiro, O'Neill	2018	Proposed waterline
P-13-004954 CA-IMP-4954 (Updated)	Prehistoric	Lithic scatter, including debitage, scrapers, cores, blades, hammerstones, and a cairn; not relocated in 2007. The buffer area of the site was visited (where it clips the current site), and no cultural features or constituents were observed. This area has been heavily impacted by the railroad and clean-up activities by the US Gypsum Plaster City Plant.	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
P-13-007421 (Updated)	Prehistoric	Prehistoric trail; the northern extension destroyed by road frontage and Interstate 8, southern extension destroyed by sheet wash erosion. This resource is outside of the APE and was not relocated. Not updated.	N/A	N/A	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	Presumed APE Location
P-13-009594 CA-IMP-8658 (Updated)	Prehistoric	Sparse lithic and ceramic scatter, including debitage (metavolcanic, obsidian), battering stone, core, corner-notched projectile points (CCS), two handstones, groundstone fragment, a hearth feature, and 29 pottery sherds. No prehistoric cultural constituents were relocated, and the site has been and continues to be heavily impacted by erosion. Historic debris site P-13-013126 overlays this site; and benchmark isolate P-13-013118 is located within it.	Shapiro, O'Neill	2018	Proposed waterline
P-13-009729 CA-IMP-8730 (Updated)	Prehistoric	The site is comprised of a ceramic and debitage scatter, with cores. The southwest portion of the site just clips the current Project APE. No cultural constituents were found to be in this southern portion of the site. The north side of the highway has been heavily disturbed by at least five linear alignments related to highway and transmission line infrastructure, and underground telephone cable. All of these disturbances are within the survey corridor.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-010068 CA-IMP-8971 EBR-305 (Updated)	Prehistoric	Lithic and ceramic scatter consisting of a metavolcanic flake, a quartzite flake, a deflated hearth, two black ceramic sherds, and three Colorado Buffware sherds. No hearth feature or cultural constituents were found. The site area has been heavily impacted by grading, leveling, and small rock compaction. Prehistoric materials have likely been smeared and buried by this maintenance activity for the railroad.	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
P-13-011542 CA-IMP-10455/H JM-021 (Updated)	Multi-component	Prehistoric component consists of eight pieces of debitage, two cores, and one core tool. The historic component consists of 20 pieces of bottle glass, including bases, one white ceramic fragment, a bucket handle, and cans. There are eight rock cluster features (metavolcanic and quartz cobbles) of indeterminable age. The resource clips the southern end of our project area and this portion likely represents a buffer for the site. No cultural constituents were observed in this corridor. The site has been impacted by the construction of the railroad (P-13-009302).	Shapiro, O'Neill, Cappetta	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	Presumed APE Location
P-13-011544 CA-IMP-10457/H JM-026 (Updated)	Multi-component	Prehistoric component is comprised of approximately 1,319 artifacts, consisting of debitage, edge-modified flakes, bifaces, hammerstones, cores/core tools, and choppers (metavolcanic, quartzite, CCS, petrified wood), in 69 concentrations, and two possible deflated hearths. Historic component includes a rock collection pile and three concentrations of debris (cans, glass, metal, ceramics, and burnt faunal bone totaling approximately 676 artifacts). The site boundary slightly overlaps the southern end of the Project APE and likely represents a buffer area. None of the sites constituents were noted in this area, which has been impacted by the construction of the San Diego and Arizona Eastern Railroad (P-13-009302).	Shapiro, O'Neill, Cappetta	2018	Proposed waterline
*P-13-011793 CA-IMP-10614 JF-022 (Updated)	Prehistoric	One metavolcanic flake and four Tizon brownware ceramic sherds. None of the cultural constituents were relocated, possibly due to erosion, OHV impact, or it may have been mis-plotted.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011794 CA-IMP-10615/H JF-025 (Updated)	Multi-component	Prehistoric component consists of three metavolcanic flakes, and three Tizon brownware ceramic sherds. Historic component is a debris scatter in three loci, comprising bottle glass and a .50-caliber cartridge (1940s-1960s). No cultural constituents were relocated within the site boundaries provided (no artifacts were plotted on the Fariello 2008 sketch map). There is heavy aeolian erosion, which may have buried/displaced the artifacts.	Shapiro, O'Neill	2018	Proposed waterline
P-13-012244 CA-IMP-12424H Fages-De Anza Trail0 (Updated)	Historic	Historic trail utilized by early Spanish occupants, trappers, the US Army, 49ers, settlers, and as a delivery route. The recorded portion is 100-meter segment severely worn and widened by off-highway vehicles that just abuts the southern boundary of the Project APE. No evidence of the trail exists within the current APE, and no trace of the trail was noted prior to impacts to the area from the construction of the existing Evan Hewes Hwy, the old Evan Hewes Hwy (P-13-008418), and the San Diego and Arizona Eastern Railroad (P-13-009302). The trajectory of the trail has largely been determined through a plot of known historic period camp locations.	Shapiro, O'Neill	2018	Proposed waterline
Previously Recorded Isolated Finds – Not Relocated					
P-13-002040 (Updated)	Prehistoric	Isolate quartzite scraper, not relocated. Since the previous recording, the area has been impacted by erosion and OHV use.	Shapiro, O'Neill	2018	Proposed waterline
P-13-004389 CA-IMP-4389 (Updated)	Prehistoric	Isolated Colorado Buffware ceramic sherd. The isolate was not relocated, and has likely been buried by aeolian and alluvial erosion.	Shapiro, O'Neill	2018	Proposed waterline

Resource Designation	Site Type	Description	Author	Date	Presumed APE Location
P-13-009727 (Updated)	Prehistoric	Isolate gray metavolcanic flake. This isolate was not relocated, and no cultural constituents were observed.	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011740 SLY-ISO-2 (Updated)	Prehistoric	Isolate metavolcanic hammerstone was not relocated. It is likely disturbance has occurred since the initial recording as a natural gas pipeline parallels the old highway and at the location plot is a newly cut road (compacted soil).	Shapiro, O'Neill	2018	Proposed waterline
*P-13-011741 SLY-ISO-4 (Updated)	Prehistoric	Isolate metavolcanic secondary flake was not relocated. The area has been heavily disturbed by construction of the highway, a berm, a transmission line parallel to the highway, and a dirt road.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011742 (Updated)	Prehistoric	Isolate metavolcanic tested cobble, not relocated. The area has been severely disturbed by installation of a natural gas pipeline.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011743 (Updated)	Prehistoric	Isolate metavolcanic secondary flake, not relocated. The area has been severely disturbed by installation of a natural gas pipeline.	Shapiro, O'Neill	2018	Proposed waterline
P-13-011744 (Updated)	Prehistoric	Isolate sandstone handstone fragment, not relocated. Area has been disturbed by old Evan Hewes Hwy, erosion, and installation of natural gas pipeline.	Shapiro, O'Neill	2018	Proposed waterline

Note: DPR Forms 523 were updated to indicate that the resources above were not relocated.
*This resource falls within the boundary of prehistoric site P-13-000269 as recorded in 2009 by URS and plotted by the SCIC. Although it falls within the boundary of site P-13-000269, it was not formally documented as a part of that larger resource. This resource was therefore rerecorded on updated DPR Forms 523 following its last prior recording.
Under Presumed APE Location, Proposed Waterline refers to the proposed waterline between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal.

6.2.1 P-13-000269 (CA-IMP-269)

P-13-000269 was first recorded by Ackers, Avels, and Collins in 1976 as a series of seven archaeological sites that were ultimately combined and extended to encompass multiple sections on the USGS 7.5-minute Plaster City topographic map by 2016. Portions of P-13-000269 have been re-recorded numerous times, though URS produced the most extensive documentation for the site in 2009. The 2009 site record documents at least 64 features, including hearths, rock cairns, and one cremation. Cultural constituents include lithic scatters with formal artifacts such as projectile points, cores, bifaces, edge-modified flakes, choppers, and performs; groundstone implements such as handstones, milling slabs, hammerstones, and sandstone manuports; *Olivella* shell beads; fire-affected rock; and calcined human and faunal bone fragments, including some identified in hearth features. Although the site boundary for P-13-000269 provided by the SCIC spans multiple sections and corresponds to the location map boundary for the site produced by ASM in 2016, the 2009 URS location map for the resource is much more constrained and depicts the resource and its features predominantly in Sections 9 and 16 south of the San Diego and Arizona Eastern Railroad (P-13-009302) alignment and outside of the Project APE.

The Project APE for the alternative waterline intersects the current boundary of P-13-000269 between Highway 80 and the San Diego and Arizona Eastern Railroad (P-13-009302) alignment in Section 10 between the Plaster City Plant and Westside Main Canal. The individual prehistoric and multi-component sites that intersect the Project APE and P-13-000269 boundary were revisited by Pacific Legacy personnel in 2018. Although these resources were encompassed by the 2016 boundary of P-13-000269, however, they were not formally documented as part of that larger resource. Based on the documentation provided by ASM in 2016 and URS in 2009, it was difficult to discern what previously recorded resources corresponded to or lay within the boundary of P-13-000269 as currently defined by the SCIC. Thirteen archaeological sites were therefore re-recorded as individual resources (P-13-000321, P-13-004389, P-13-004391, P-13-010066, P-13-010068, P-13-011165, P-13-011627, P-13-011633, P-13-011635, P-13-017740, P-13-011741, P-13-011793, and P-13-011794) following prior, discrete recording events in an effort to better portray the true extents and distribution of cultural materials within the Project APE. URS (2010) offered no formal evaluation of P-13-000269, but suggested that the site may be eligible for listing in the NRHP and CRHR under Criterion D/4, or its potential to reveal intact, subsurface deposits with significant research or data potential.

6.2.2 P-13-002355 (CA-IMP-2355)

P-13-002355 is a prehistoric site that was first recorded in 1977 and described as a lithic scatter with six pieces of light green porphyry debitage. During the 2018 Class III pedestrian inventory survey, only one piece of green debitage was noted at the west end of the site location. A concentration of at least 12 pieces of mostly umber-colored CCS debitage was noted, however in addition to three concentrations of pottery fragments. The site appears to have been impacted by the construction of Highway 80, as prehistoric pottery fragments were found in a cut bank eroding downslope towards the highway. The site lies on a terrace with patches of desert pavement and is bisected by a gravel OHV road.

6.2.3 P-13-004391 (CA-IMP-4391/H)

P-13-004391 was first documented in 1981 as a historic period debris scatter. It was later re-recorded by URS in 2008 and in 2009 when it was described as a multi-component site with a prehistoric lithic and ceramic scatter and a 1900-1920s historic period debris scatter with metal, ceramics, glass, and cans as well as a series of berms and depressions. URS recommended data recovery efforts at the site in 2009 to determine its eligibility for listing in the NRHP. In 2018, the site was found to be as previously described, though approximately 16 pottery fragments and one piece of CCS debitage were found beyond the northeastern boundary of the site as it was defined in 2009. The site boundary was therefore expanded approximately 30 meters to the northeast to include these debitage and pottery fragments. The pottery fragments varied from gray to red in color and measured 2.0-5.5 centimeters in size and 0.5 centimeters in thickness. The northern edge of P-13-004391 is near the old Highway 80 alignment (P-13-008418), and the prehistoric component of the site is likely associated with prehistoric site P-13-011165, which is across Highway 80 to the north. The area around P-13-004391 has been impacted by OHV activity and by aeolian and alluvial erosion.

6.2.4 P-13-008139 (CA-IMP-7739H)

P-13-008139 was originally documented in 1998 as a 4,920-foot segment of the 27-mile long historic period Plaster City Railroad as it approaches its southern terminus at the Plaster City Plant. Also included as a part of the resource was a prehistoric site component including midden soils, hearths, fire altered rock, pottery, groundstone, flaked stone, faunal and fish bone fragments, bedrock mortars, a rock cairn, a coprolite specimen, and a few metal fragments, possibly from a flintlock or sidelock. This prehistoric component was recorded along the railroad alignment over 5 miles southeast of proposed Well No. 3 and well outside of the current Project APE. The prehistoric component was, therefore, not revisited during the current investigation. In 2009, URS recorded a portion of P-13-008139 near the Plaster City Plant and evaluated it for listing in the NRHP and CRHR. URS recommended the recorded portion of the resource not eligible for listing in the NRHP and CRHR as an individual resource and/or as a possible contributor to the larger railway alignment.

An approximate 3.45-mile segment of the narrow-gauge railroad alignment was recorded in 2018 as it extends from the Plaster City Quarry towards proposed Well No. 3 within the Project APE for the waterline/powerline. The railroad alignment features rails that are 36 inches apart and are supported by wooden ties. Ten features associated with the alignment were documented in 2018, including nine maintenance offset tracks (Features 1-9) and one large culvert (Feature 10) with horizontally aligned drain pipes. A remnant telegraph line also was documented along the railroad grade. The remaining portion of the Plaster City Railroad alignment, which was not recorded in 2018, continues generally south before terminating at the Plaster City Plant. The Plaster City Plant and Plaster City Railroad were planned and built between 1920 and 1921, though URS noted during their 2009 recording of the southern portion of the alignment that many of the tie plates and joint bars have been replaced and the rails have apparently been replaced to support heavier loads.

6.2.5 P-13-008323 (CA-IMP-7816/H)

P-13-008323 was first recorded in 1999 as a historic period railroad stop with associated features and historic period and modern debris located along both sides of BLM Road 151 and the San Diego and Arizona Eastern Railroad alignment (P-13-009302). The site was re-recorded in 2007 when it was interpreted it as a temporary campsite along the railroad. P-13-008323 was documented again in 2008 by URS, though only debris along the south side of the railroad was recorded and the resource was recharacterized as a multi-component site following the discovery of one highly polished bifacial granite handstone within its boundaries.

In 2018, historic period debris was relocated along both sides of the railroad tracks and was found to extend further north than previously documented. The granite handstone was not relocated in 2018, and only historic period site constituents were documented. The historic period deposit includes debris dating from the late 1910s to modern times and, as currently documented, extends 436 feet north of the railroad tracks and 688 feet east to west. P-13-008323 appears to represent multiple secondary roadside discard events along both sides of BLM Road 151. The resource has been impacted by aeolian and alluvial erosion and modern-day trash deposition. Historic period materials noted to the north of the road comprise mostly sanitary, hole-in-top, and tobacco cans similar to those previously documented to the south side of the railroad.

6.2.6 P-13-008334

Various segments of P-13-008334, the Westside Main Canal, have been recorded since 1999. The Westside Main Canal is an irrigation canal that was built in 1908 as a part of the Imperial Irrigation District canal system. It spans approximately 40 miles through agricultural lands in the Imperial Valley section of Imperial County. The Westside Main Canal consists of an earthen canal with earthen levees and measures approximately 25 feet in width and 10 feet in depth near the Project APE. The 1940 Plaster City and Coyote Wells 15-minute USGS topographic map revealed that its general course has remained consistent and it has not been substantially realigned (USGS 1940a, 1940b). In the 1930s, the canal was integrated into the All American Canal system, which runs east-west just north of the US-Mexico border. In 2018, a 0.25-mile segment of the canal at the eastern end of the alternative waterline that was documented by URS in 2009 was re-recorded as it spans the Class I archival and records search area for the Project. Various segments of the canal have been recommended eligible for listing in the NRHP and/or the CRHR for its significance in the development of Imperial Valley, though other segments have been recommended not eligible for listing in either register due to lack of integrity. The segment that was re-recorded by Pacific Legacy personnel in 2018 was recommended not eligible by URS in 2009 through a survey-level evaluation. URS (2009) noted that while the canal appeared eligible for listing in the NRHP and CRHR under Criteria A/1 and C/3, it did not appear to possess sufficient integrity of workmanship, design, setting, feeling, and association.

6.2.7 P-13-008418 (CA-IMP-7886)

Segments of P-13-008418--alternatively known as Highway 80, US Highway 80, or the Evan Hewes Highway—have been recorded numerous times between 2001 and 2011. The highway parallels the Project APE for the proposed and alternative waterline between Ocotillo and the Westside Main Canal and intersects the APE for much of its length. Highway 80 within Imperial County was part of a transcontinental highway spanning from San Diego, California to Tybee Island, Georgia (Cooper 2004). From 1916 to 1926, the pre-highway alignment from El Centro to Yuma consisted of a wood plank roadway. In 1926, these planks were mostly removed and replaced by an oil-surfaced road (Henderson 1968). A second improvement to the roadway was made between 1913 and 1917 when a poured concrete segment west of Dixieland and south of the asphalt alignment was placed. In 1929, the State Highway paved sections of the roadway included a segment 3 miles west of Coyote Wells and a segment between Dixieland and Seeley. Highway 80 continued to be an important east-west transportation route until it was superseded by Interstate 8. The highway was decommissioned in 1964, but remained in use until Interstate 8 was completed in 1974. Within Imperial County, Interstate 8 is still often referred to as Highway 80.

In 2018, Pacific Legacy conducted detailed recording of two discrete parallel sections of Highway 80, one 2,000-foot long portion (north), and one 1,919-foot portion (south), while relying on true-color orthophotographs to document the other sections of the highway within and along the Project APE for the proposed and alternative waterline. The southern section is presumed to be an earlier single-lane concrete and aggregate section of the highway. It is situated between the San Diego and Arizona Eastern Railroad (P-13-009302) and the current highway alignments. Five bridges and three culverts also were recorded in 2018, which all date to 1932. Spare scatters of historic debris also were noted along the highway. In 2012, a National Register Nomination form was prepared by ASM Affiliates for Highway 80, however this nomination remains under review and has not yet been submitted to the Keeper. In 2011, AECOM noted that a 1-mile segment of the highway in Dixieland did not appear to be eligible for listing in the NRHP and/or the CRHR. A segment of the old highway in the Mountain

Springs Grade area evaluated in 2010 by ASM Affiliates also was recommended not eligible for listing in the NRHP and/or the CRHR. In 2009, URS made the same recommendation for a segment of Highway 80 as it passes through the Plaster City area.

6.2.8 P-13-009302 (CA-IMP-8489H)

P-13-009302 is the San Diego and Arizona Eastern Railroad, which encompasses intact rail and track segments; railroad bridges, including several timber trestle bridges with railroad signs; fences; and associated historic period debris scatters. The railroad consists of standard-gauge track on a raised berm that parallels the old Highway 80 alignment, which is located to the north of the railroad alignment. The railroad was constructed between 1907 and 1919, and served as an important connection between the cities of San Diego and El Centro. At El Centro, the railroad connected to the Southern Pacific's network of rail lines extending into the eastern US. Numerous segments of the railroad and a number of its associated features have been recorded in Imperial County between 2007 and 2011.

In 2018, Pacific Legacy personnel re-recorded the portion of the railroad that intersects the Southern edge of the Project APE for the proposed and alternative waterline between Ocotillo and Westside Main Canal. Following the same methodology used for Highway 80 (P-13-008418), portions of the railroad alignment extending outside of but paralleling the Project APE were mapped with the assistance of true-color orthophotographs. In 2009, ASM Affiliates recorded segments of the railroad near Ocotillo and Plaster City and also recorded three railroad bridges and a fence. ASM Affiliates recommended that these recorded segments of the railroad be regarded as eligible for listing in the NRHP and CRHR under Criteria A/1 and C/3 because of the critical role the railroad played in the economic development of Imperial and San Diego counties from the 1920s to the present. In 2011, AECOM recommended two non-contiguous segments of the railroad eligible for listing in the NRHP and CRHR.

6.2.9 P-13-009303

P-13-009303 is the Plaster City Plant, which was built in 1920-1921 by the Imperial Gypsum and Oil Corporation (1922-1924), sold to the Portland Cement Company (1924-1945), and then sold again to the US Gypsum Company (1945-present), which currently operates the plant. The Plaster City Plant is bisected by Highway 80. The north side of the plant includes the administration building (with elements dating to the 1940s) as well as a modern processing barn and parking lot. The south side has a greater number of structures, mostly modern warehouses and storage containers, with one two-story warehouse that dates to the 1940s. The plant has been the object of several building and improvement efforts since the 1940s.

The Plaster City Plant was originally documented in 2007 and then more extensively by URS in 2009. In 2018, the Plaster City Plant was revisited by Pacific Legacy personnel and was found to be unchanged since it was last recorded. The plant continues to function as a processing facility for gypsum materials delivered to the site from the USG Plaster City Quarry to the north. In 2009, URS recommended the Plaster City Plant not eligible for listing in the NRHP and/or the CRHR.

6.2.10 P-13-010066 (CA-IMP-8969H)

According to records provided by the SCIC, P-13-010066 was recorded by URS on the same date in two separate recording events. One record describes the site as a historic period refuse scatter adjacent to the San Diego and Arizona Eastern Railroad alignment (P-13-009302). The other describes a sparse lithic and ceramic scatter containing one metavolcanic primary flake, one quartzite primary flake, and three Colorado Buffware ceramic sherds; the Primary Form for this second record notes the site as "Historic," though the accompanying Archaeological Site Form describes a historic period site with two loci containing glass, metal fragments, white wear ceramic sherds, and cans. When P-13-010066 was revisited by Pacific Legacy in 2018, two historic period loci and a sparse scatter of historic period debris were identified within the site boundaries, and a very wide wash was noted to the south of the site. One piece of prehistoric pottery was found on the edge of a drop-off adjacent to the wash approximately 10 meters to the southeast of the site boundary and outside of the current Project APE. No other prehistoric material was observed in the area. The site has been impacted by OHV activity as well as aeolian and alluvial erosion.

6.2.11 P-13-011165 (CA-IMP-10171)

P-13-011165 was originally recorded in 1999 as a lithic and ceramic scatter consisting of 30 flakes (quartzite, porphyry, and jasper), 14 porphyry cores or core fragments, two quartzite cores, three handstones (granite, basalt, and quartzite), and 110 likely Colorado Buffware sherds, two with black interior and temper. When P-13-011165 was revisited in 2018, the previously recorded boundaries of the site were found to be accurate. The southern edge of the site just extends into the northern edge of the current Project APE for the alternative waterline between the Plaster City Plant and Westside Main Canal. It lies beneath a high voltage power line and is approximately 15 meters north of the edge of Highway 80 (P-13-008418). Approximately 20 ceramic sherds and at least six flakes were noted within the current Project APE.

6.2.12 P-13-011626/P-13-012732 (CA-IMP-10538/CA-IMP-11181/H)

P-13-011626 was first recorded by URS in 2009 as a multi-component resource consisting of 131 prehistoric and 203 historic period artifacts within three loci. Prehistoric artifacts included flaked stone (CCS, quartzite, metavolcanic) debitage and cores as well as hammerstones and ceramics (94 buffware and 15 brownware sherds) in three loci. Historic period materials included bottle glass, cans or tins, and tableware fragments concentrated in one locus. P-13-012732 was first recorded in 2003 as a prehistoric site with over 25 Colorado Buffware sherds, five black porphyry flakes, and four fire-affected rocks clustered around an existing wooden distribution pole.

In 2018, P-13-011626 and P-13-012732 were noted less than 5 meters apart and so were combined as a single resource. Pacific Legacy personnel found that P-13-012732 appeared to coincide with one locus (Locus 1) in P-13-011626 as well as a part of a second locus (Locus 3). Since P-13-011626 and P-13-012732 were last recorded, the wooden distribution line pole at P-13-012732 was fully removed and a natural gas pipeline was installed paralleling the highway. The newly designated multi-component site P-13-011626/P-13-012732 still contains three loci (Loci 1-3) of concentrated materials as well as cultural constituents scattered throughout the combined site area. All loci and many artifacts were relocated as previously described in 2009, though the area has been subject to ongoing impacts from OHV use and aeolian and alluvial erosion. Although

P-13-011626 and P-13-012732 do not appear to have been formally evaluated, URS recommended in 2009 that P-13-011626 be subject to subsurface testing to determine its data potential and eligibility for listing in the NRHP and/or CRHR under Criterion D/4.

6.2.13 P-13-011627 (CA-IMP-10539/H)

First recorded by URS in 2009, P-13-011627 is a multi-component site located along the northern portion of the Project APE between the Plaster City Plant and Westside Main Canal. The prehistoric site component is concentrated in one locus (Locus 1) and consists of four CCS and metavolcanic flakes as well as 27 brownware ceramic sherds. The historic period component also is concentrated in one locus (Locus2) and consists of one key-wind opened, one vent-hole, and seven church-key opened cans as well as brown, colorless, and aqua glass fragments dating to 1935 or later. In 2018, P-13-011627 was relocated and the artifacts and loci were found as previously described. The condition of the site appeared unchanged since it was recorded in 2009, though there was evidence for erosion and OHV use within and around the site area. URS did not evaluate the site in 2009, but recommended that P-13-011627 be subject to subsurface testing to determine its data potential and eligibility for listing in the NRHP and/or CRHR under Criterion D/4.

6.2.14 P-13-011628 (CA-IMP-10540/H)

P-13-011628 was originally recorded by URS in 2009 as a prehistoric site with three loci containing lithic debitage, cores, hammerstones, handstones, and milling slab fragments, 258 buffware sherds, and a deflated hearth. When the site was revisited in 2018, Pacific Legacy personnel found all three loci as previously described in 2009 as well as historic period debris scattered throughout the site area. The deflated hearth feature was not observed, but a concentration of black slag measuring 10 feet by 2 feet was found just west of the hearth feature's reported location. Just northeast of the slag concentration, a barrel hoop, tin cans (church-key opened and knife opened), white earthenware ceramic fragments, a solarized glass finish, fragments of milk glass, and bottle glass fragments (7-Up, green, and colorless) were identified. Another barrel hoop was located between the deflated hearth feature location and one of the three loci (Locus 2). Colorless bottle glass fragments also were found west of another locus (Locus 3). Hazel-Atlas, Owens Illinois, and Dura glass marker's marks were present on some of the glass bottle bases, indicating a likely 1930s to 1940s date range for the site's historic period debris. P-13-011628 has been recharacterized as a multi-component site with both prehistoric and historic period components. With the addition of the historic period debris, the previous site boundaries have been extended to encompass a rounder, less amorphous shape. P-13-011628 is located on a rise above a wash to the south of Highway 80 (P-13-008418) and north of the railroad (P-13-009302). The site slopes to the south, and prehistoric materials were observed in 2018 eroding downslope towards a wash. The entire site area has been impacted by erosion as well as OHV activity. As with other prehistoric sites or sites with prehistoric components, URS did not evaluate P-13-011628 in 2009, but recommended it be subject to subsurface testing to determine its data potential and eligibility for listing in the NRHP and/or CRHR under Criterion D/4.

6.2.15 P-13-011629 (CA-IMP-10541H)

P-13-011629 was first documented by URS in 2009 as a historic period debris scatter intersected by the former Highway 80 alignment (P-13-008418). As documented in 2009, the site contained

29 metal cans (25 church key-opened, one condensed milk, and three cone top cans), one green and 24 brown glass fragments, 10 or more rubber tire fragments, and one metal auto pipe dating to between the 1900s to 1950s. In 2018, the site was found to be as previously described, and no additional cultural constituents were observed. P-13-011629 is located between the Plaster City Plant and Westside Main Canal, and it likely represents a secondary debris scatter associated with roadside deposition. In a 2009 survey-level evaluation of the site, URS recommended P-13-011629 not eligible for listing in the NRHP and/or the CRHR.

6.2.16 P-13-011630 (CA-IMP-10542H)

P-13-011630 was first documented by URS in 2009 as a historic period debris scatter of 20 artifacts consisting of cans, bottle glass, miscellaneous metal, and a rubber mat (deposited after 1955) as well as a "C" block marker. In 2018, the site was found to be as previously described, and no additional cultural constituents were observed. Given to its proximity to Highway 80 (P-13-008418), the site likely represents multiple secondary roadside discard events. The "C" block marker also is associated with the highway. URS recommended P-13-011630 not eligible for listing in the NRHP and/or the CRHR in a 2009 survey-level evaluation of the site.

6.2.17 P-13-011631 (CA-IMP-10543H)

As first documented in 2009 by URS, P-13-011631 comprises a debris scatter of 20 artifacts consisting of cans, bottle glass, and a metal ring (deposited 1956+); a dislodged concrete state route marker with beveled edges that has been impressed with a "C" and topped by a copper plug inset (1914-1934); and an isolated basalt flake. In 2018, all cultural constituents were relocated, excepting one milk glass jar. The site has been impacted by erosion and OHV activity. Due to its proximity to Highway 80 (P-13-008418), the historic period debris likely represents multiple episodes of casual roadside discard. The "C" block marker is also associated with the highway. URS recommended P-13-011631 not eligible for listing in the NRHP and/or the CRHR in a 2009 survey-level evaluation of the site.

6.2.18 P-13-011632 (CA-IMP-010544H)

P-13-011632 was first documented by URS in 2009 as a debris scatter with 17 artifacts consisting of cans and bottle glass deposited circa 1935-1960s. In 2018, the site was found to be as previously recorded and all cultural constituents were relocated. A "C" marker was mentioned as present within the site boundary in the earlier record, but was documented separately (P-13-011649) and was not re-recorded in 2018. URS recommended P-13-011632 not eligible for listing in the NRHP and/or the CRHR in a 2009 survey-level evaluation of the site.

6.2.19 P-13-011633 (CA-IMP-10545/H)

P-13-011633 is a multi-component site that was originally documented by URS in 2009. The historic period component consisted of three loci with 106 artifacts, including church-key opened and sanitary cans, bottle glass, and one metal plate (deposited after 1958). The prehistoric component comprised six pieces of metavolcanic, jasper, and CCS debitage and one buffware pottery sherd. In 2018, Pacific Legacy personnel found P-13-011633 to be as previously documented and recorded several additional artifacts including one flake, one pottery fragment, and two bottle glass fragments. The site has been impacted by aeolian and alluvial erosion. Through a survey-level evaluation of the site in 2009, URS recommended the prehistoric and historic period components of P-13-011633 not eligible for listing in the NRHP and/or the CRHR.

6.2.20 P-13-011634 (CA-IMP-10546H)

P-13-011634 was first documented by URS in 2009 as two historic period debris loci as well as a scatter of historic period materials outside the loci representing roadside discard along Highway 80 (P-13008418). When Pacific Legacy revisited the site in 2018, the resource appeared as originally documented. P-13-011634 contains at least 137 artifacts including bottle glass; church-key opened, sanitary, and crimp seam cans; metal and box spring fragments; and rubber tire remnants dating to the 1920s-1950s. Both loci remained evident, though aeolian and alluvial erosion appeared to have impacted the site. URS recommended P-13-011634 not eligible for listing in the NRHP and/or the CRHR in a 2009 survey-level evaluation of the site.

6.2.21 P-13-011635 (CA-IMP-10547/H)

URS first recorded P-13-011635 in 2009 as a multi-component site. The prehistoric site component consisted of one basalt tertiary flake and two buffware pottery sherds. The historic period component comprised a concrete "C" marker with a copper plug as well as 723 artifacts, including 523 glass fragments; church-key opened, sanitary, removable lid, key wind, hole and cap and other cans; miscellaneous metal, including fragments of a metal bucket and molded sheet metal; ceramic insulators; and electrical wire dating from 1916 to 1954 or later. The isolated prehistoric flake and pottery sherds were not relocated when Pacific Legacy revisited the site in 2018. The debris scatter was relocated and found to be sparse and dispersed along both sides of an abandoned segment of the old Highway 80 corridor (P-13-008418) south of the current highway. The "C" marker was associated with the abandoned highway, and the historic period debris likely represented casual roadside discard along the route. The site has been impacted by erosion and OHV use. URS did not evaluate P-13-011635 in 2009, but recommended that the site be subject to subsurface testing to determine its data potential and eligibility for listing in the NRHP and/or CRHR under Criterion D/4.

6.2.22 P-13-011636 (CA-IMP-10548H)

P-13-011636 was first documented by URS in 2009 as a concrete "C" marker with a copper plug and a debris scatter of 13 artifacts, including one matchstick condensed milk can, nine sanitary can fragments, one rectangular internal friction closure spice can, one glass tumbler fragment and one aqua glass bottle base. In 2018, the site was found to be as previously recorded, though the 2009 sketch map did not depict Highway, which was immediately north of the site, or a high pressure gas utility pipeline that runs northeast-southwest and intersects the northernmost edge of the site. The single "C" marker is associated with the Highway 80 corridor (P-13-008418), and it seems likely that the historic period debris, which dates from the 1900-1950s era, represents casual roadside deposition. In a 2009 survey-level evaluation of the site, URS recommended P-13-011636 not eligible for listing in the NRHP and/or the CRHR.

6.2.23 P-13-011790 (CA-IMP-10612H)

P-13-011790 was first documented by URS in 2008 as a ca. 1930s-1960s historic period debris scatter of 23 artifacts including church-key cans, one cone top one beer can, one square meat can, a bottle with applied lettering, four bottle bases with maker's marks, a pull tab, and a one quart oil can. When Pacific Legacy revisited the site in 2018, the resource appeared as originally recorded, though only the northern edge of the site extends into the Project APE with the majority of the site constituents located to the south of the APE. The debris scatter was recorded between Highway 80 (P-13-008418) and the San Diego and Arizona Eastern Railroad (P-13-009302) and likely represents secondary roadside deposition. A northeast-southwest trending dry wash bisects the central portion of the site, and P-13-011790 has been somewhat impacted by aeolian and alluvial erosion.

6.2.24 P-13-011792 (CA-IMP-10613H)

P-13-011792 was originally recorded in 2008 by URS Corporation and described as a historic period artifact scatter comprised of cans and bottles in a highly disturbed area between Highway 80 (P-13-008418) and the San Diego and Arizona Eastern Railroad (P-13-009302). Site constituents recorded in 2009 included 20 church-key opened cans, ten pull-tab cans, one crushed coffee can with a key opening, a metal can and lid, and several glass bottles including at least four with maker's marks indicating a 1930s-1960s date for the site. P-13-011792 was relocated by Pacific Legacy in 2018 and the site was found as previously recorded. The artifacts are dispersed along Highway 80 (P-13-008418) and were likely scattered during multiple roadside discard events.

6.2.25 P-13-011801 (CA-IMP-10621H)

URS first recorded P-13-011801 in 2008 as a historic period debris scatter comprised mostly of church-key opened beer cans, though bottle glass bases and fragments and one stoneware cup fragment also were noted. Maker's marks from the glass artifacts indicate the site likely dates to between the 1920s and 1940s. Pacific Legacy personnel relocated P-13-011801 in 2018 and the site was found as previously recorded between Highway 80 (P-13-008418) and the San Diego and Arizona Eastern Railroad (P-13-009302). As with other sites in the vicinity, P-13-011801 likely represents the result of expedient roadside discard.

6.2.26 P-13-013126 (CA-IMP-11437H)

P-13-013126 was first recorded by AECOM in 2009 as a historic period debris scatter comprised of one cone-top, one church-key opened, and one evaporated milk can along with other can fragments; glass and bottle fragments; and milled lumber. The age range for the cans indicated that the debris was likely deposited in the 1930s. The site was recorded immediately south of the San Diego and Arizona Eastern Railroad (P-13-009302). Pacific Legacy personnel revisited the site in 2018 and relocated the historic period debris, which included railroad ties associated with the railroad. P-13-013126 also overlapped a prehistoric site (P-13-009594) that was documented in 2007 by Gallegos & Associates but that resource was not relocated in 2018. The area encompassing the prehistoric site, which overlapped the western half of P-13-013126, had been heavily disturbed as indicated by the presence of push piles, graded areas devoid of vegetation, and piles of palm tree trimmings.

6.2.27 PLASTER CITY QUARRY

The historic period Plaster City Quarry was originally documented in 2002 s a part of the initial Class III pedestrian inventory survey conducted by Pacific Legacy in support of the 2006 Draft and 2008 Final EIR/EIS. The Imperial Gypsum and Oil Corporation owned the quarry in the early 1900s and built the narrow-gauge Plaster City Railroad (P-13-008139) in 1920-1921 to facilitate removal of large quantities of gypsum from the quarry to a crusher plant near the San Diego and Arizona Eastern Railroad alignment (Tucker 1926:271). The Imperial Gypsum and Oil Corporation, however was not very successful and sold the quarry to the Pacific Portland Cement Company in 1924. The Pacific Portland Cement Company added a plaster manufacturing plant to the ore crusher, which became Plaster City, and operated the quarry until the mid 1940s (Tucker 1926:271). In 1947, the Plaster City Quarry and the Plaster City Railroad were purchased by USG, which continues to own and operate the quarry and its facilities. USG modernized quarry operations by adding a 900-foot belt and two kilns among other improvements. During the 1940s-1960s, the Plaster City Plant (P-13-009303) produced plaster board, sacked lath, and plaster for agricultural purposes (URS 2010:2-32). A fuller overview of the historic period Plaster City Quarry is provided in Section 3.3.3.

The Plaster City Quarry was the main focus of Pacific Legacy investigations in 2002 and in 2018, and a number of resources have been recorded within its boundaries as a result. These include one prehistoric archaeological site (PLI-2018-1), one historic period locus (designated USG-01 in 2002 and renamed Locus 1 in 2018), and 15 isolated finds recorded within the main quarry area as well as one prehistoric site, the historic period Plaster City Railroad (P-13-008139), and three isolated finds associated with the proposed waterline/powerline and/or the parcel surrounding proposed Well No. 3. Although the other resources located within the boundaries of the Plaster City Quarry have received unique designations and are discussed above and in Section 6.2, Locus 1 deserves further mention. It was first recorded in 2002 as a U-shaped, dry-laid stacked stone structure with an interior hearth and a historic period debris scatter. When it was revisited in 2018, its condition was found largely unchanged as the stone structure remained standing, the fire pit was relocated, and the historic period debris noted in 2002 was present. A dirt road enters the locus from the northeast and the east end features multiple bulldozer tracks. A cluster of cans with bullet holes, likely used for target practice, also were noted. One oval-shaped tobacco tin with a hinged lid with a striker plate was observed as well as many condensed milk tins. Artifacts remain scattered about the locus with a few areas featuring more concentrated materials. The area has been somewhat impacted by aeolian erosion, which has likely buried and/or unearthed some of the historic period debris. USG personnel noted that Locus 1 had been used in the past by quarry employees as a recreational or gathering area.

6.3 NEWLY DISCOVERED CULTURAL RESOURCES

In addition to the previously recorded cultural resources that were relocated within the surveyed portions of the Project APE, two additional prehistoric archaeological sites, 13 prehistoric isolated finds, and nine historic period isolated finds were newly discovered. Nineteen of these resources, including both archaeological sites and 17 isolated finds, were noted within the Plaster City Quarry. Three were found along the proposed waterline/powerline or the area encompassing proposed Well No. 3 and two were encountered along the proposed waterline between Ocotillo and the Plaster City Plant. Each of these resources is summarized in Table 6-4, and both archaeological sites are further described below. These resources are depicted in Appendix B, and DPR Forms 523 are provided for each in Appendix C.

Table 6-4. Newly Recorded Cultural Resources within the Project Area of Potential Effects.

Resource Designation	Site Type	Description	Author	Date	APE Location
Newly Identified and Recorded Sites					
PLI-2018-1	Prehistoric	Lithic scatter of a few quartz flakes, an edge-modified flake, handstone, milling slab fragment, at least 50 ceramic sherds, two possible hearth features, and a gypsum outcrop overhang feature.	Shapiro, O'Neill, Sprague	2018	Plaster City Quarry
PLI-2018-2	Prehistoric	Discrete scatter of at least 26 ceramic fragments, appearing to be from a single vessel. The site is heavily impacted from OHVs and target shooting.	Shapiro, O'Neill, Sprague	2018	Plaster City Quarry
Newly Identified Isolated Finds					
PLI-2018-ISO-1	Prehistoric	Isolate assayed/shattered quartz cobble.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-2	Prehistoric	Isolate assayed quartz boulder, partially shattered.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-3	Prehistoric	Isolate quartz Desert Side-notched projectile point.	W. Shapiro, M. O'Neill, W. Sprague	201	Proposed Waterline
PLI-2018-ISO-4	Historic	Isolate amethyst glass fragments from a single bottle.	W. Shapiro, M. O'Neill, W. Sprague	2018	Proposed Waterline
PLI-2018-ISO-5	Prehistoric	Isolate quartz shatter from an assayed cobble.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-6	Prehistoric	Isolate assayed quartz cobble with shatter.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-7	Prehistoric	Isolate assayed quartz cobble with shatter.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-8	Prehistoric	Isolate assayed quartz cobble shatter.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-9	Prehistoric	Isolate assayed quartz cobble shatter.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-10	Historic	Isolate brass cap US GLO survey marker (1921).	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-11	Historic	Isolate brass cap US GLO survey marker (1916) set in mound of boulders; three other large boulder mounds and two tobacco tins located nearby.	W. Shapiro, M. O'Neill, W. Sprague	2018	Plaster City Quarry
PLI-2018-ISO-12	Prehistoric	Isolate assayed quartz cobble and shatter.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-13	Historic	Two isolate rock cairns separated by a cut, one with a brass cap US GLO survey marker (1921); the other with a tobacco tin and knife-opened sanitary can.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry

Resource Designation	Site Type	Description	Author	Date	APE Location
PLI-2018-ISO-14	Historic	Isolate brass cap US GLO survey marker (1921) in a rock cairn, with a Kerr Mason jar containing 1994 claim papers and two wooden lath pieces.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-15	Historic	Isolate rock cairn with PVC pipe in the center, an "X" aerial target made from reflective cloth crossing through it, and a Sir Walter Raleigh tobacco tin.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-16	Historic	Isolated historic and modern debris scatter of auto parts, melted window and bottle glass, charcoal and slag.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-17	Historic	Isolate cylindrical steep pipe water well head with welded steel cap; bullet holes present.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Proposed Waterline/ Powerline
PLI-2018-ISO-18	Prehistoric	Isolate ceramic sherd with scratch lines.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Proposed Waterline/ Powerline
PLI-2018-ISO-19	Historic	Isolate knife-opened holes-in-top can with bullet holes.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Proposed Waterline/ Powerline
PLI-2018-ISO-20	Prehistoric	Isolate of three ceramic sherds from the same vessel.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-21	Prehistoric	Isolate ceramic sherd.	Shapiro, O'Neill, Cappetta	2018	Plaster City Quarry
PLI-2018-ISO-22	Prehistoric	Isolate assayed quartz cobble shatter.	W. Shapiro, M. O'Neill, M. Cappetta	2018	Plaster City Quarry

Note: Under APE Location, Proposed Waterline refers to the proposed waterline between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal.

6.3.1 PLI-2018-1

PLI-2018-1 is a prehistoric site that was first encountered in 2018 at the extreme southern end of the Plaster City Quarry adjacent to and upslope from a meandering draw that widens within the site area. The site encompasses two hearth features (Features 1 and 2), a rock overhang, a ceramic scatter, one granitic milling slab fragment (Artifact 1), a granitic handstone (Artifact 2), an edge-modified flake (Artifact 3), and a few quartz flakes. Feature 1 consists of a granitic rock circle containing charcoal and lightly blackened soil that measures 2 meters north-south and 1.6 meters east-west. It has been impacted by aeolian erosion and is slightly deflated but may be at least 2 centimeters deep. It was unclear if the feature represented a prehistoric, historic period, or modern fire ring. Feature 2 is a rock concentration with charcoal stained soils that also may represent a prehistoric hearth, though its age remains uncertain. It measures 1.8 meters north-south and 1.9 meters east-west. It is located within the wash to the southwest of Feature 1. Feature 3 is an overhang upslope from Feature 1. It is located in a gypsum outcrop with a talus slope of gypsum blocks emanating from the outcrop. The overhang is deep enough to crawl into and the floor is comprised of a light-colored gypsum soil. The overhang measures 1.25 meters high at the left side of the opening and 0.8 meters high at the right side of the opening. The overhang is 3.95 meters wide and 2.8 meters deep. Pottery sherds were found at the opening of the overhang and charcoal was scattered mostly at the edge of the overhang and downslope to Feature 1, but also to the east of the opening on the slope.

At least 50 pottery fragments were found at PLI-2018-1, most scattered downslope between Features 1 and 3. Two fragments were found in the draw on the southeast side of the site. Three fragments also were found in the southwestern portion of the site. At least two ceramic types were observed—Brownware with a light orange interior and tan exterior with these colors reversed in some instances and a reddish and tan pottery. All recorded ceramics were body sherds, many of which were curved. The tan and orange pottery was 4-5 centimeters thick and the largest fragments measured 8 by 10 centimeters. The reddish pottery was 5-6 centimeters thick and was more fragmented. Many sherds of both types displayed blackening. The granitic milling slab fragment (Artifact 1) was found on a slope near Artifact 2 and measured 29 (l) by 19 (w) by 7 (th) centimeters. The milling surface measured 13 by 13 centimeters. The granitic handstone (Artifact 2) was complete and measured 12 (l) by 9 (w) by 6 (th) centimeters. The edge modified flake (Artifact 3) was made from quartz and featured flake scars all along one margin. PLI-2018-1 crosses the Project APE for an unnamed wash or draw that witnesses seasonal rains. On-site vegetation includes creosote, ocotillo, barrel cactus and other shrubs. Gypsum outcrops are present in and around the site area.

6.3.2 PLI-2018-2

PLI-2018-2 is a prehistoric site that was first encountered in 2018 near the southern end of the US Gypsum parcel that encompasses proposed Well No. 3 and a portion of the proposed waterline/powerline. The site comprises a discrete pottery scatter with at least 26 sherds. Twenty sherds were recorded within a 2-meter radius in a low area of compacted sand that had been impacted by alluvial erosion. Six other ceramic sherds were found scattered to the east. Other fragments may be present and have likely been buried or displaced by alluvial action. All of the pottery fragments appeared to be from a single vessel. The exterior of each sherd was characterized by the same red/brown color while the interior was buff colored with gray to black temper. No rim fragments were found and all appeared to be body sherds with slight curvature. The sherds ranged in size from 1.5-5.5 centimeters and were 0.4-0.5 centimeters in thickness. The area surrounding PLI-2018-2 has been heavily disturbed by OHV activity as well as alluvial and aeolian erosion. The area also has been used for recreational shooting, evidenced by numerous skeet fragments, ammunition cartridges and casings, and glass shards as well as other modern debris.

7.0 SUMMARY

A Class I archival and records search of the Project APE and a surrounding 0.25-mile radius revealed that 36 prior cultural resource studies overlapped some portion of the APE, though only five of those studies were conducted within the past ten years. With the exception of Pacific Legacy's 2002 investigation of the Plaster City Quarry, all of these studies focused on the proposed waterline between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal. The Class I archival and records search also revealed that 65 cultural resources have been previously recorded within the Project APE, including 14 prehistoric archaeological sites, 30 historic period archaeological sites or built environment resources, 11 multi-component resources, and 10 isolated finds. A further 118 resources (87 archaeological sites or built environment resources and 31 isolated finds) were documented outside of the Project APE but within a surrounding 0.25-mile radius. Most of the prehistoric resources recorded within Project APE comprised lithic and ceramic scatters while most of the historic period resources consisted of cans, glass, and metal debris scatters likely associated with road and railway corridors.

In April and May 2018, Pacific Legacy personnel conducted a Class III pedestrian inventory and spot-check survey of all accessible areas within the Project APE. Approximately 879 acres were subject to an intensive Class III pedestrian inventory survey while 517 acres were examined as a part of the spot-check survey of the proposed and alternative waterline. A total of 585 acres were inaccessible due to topographic or safety constraints. The Class III pedestrian inventory survey encompassed 180 acres of BLM lands, 17 acres of California State lands, and 682 acres of private lands. Spot-check survey areas included 306 acres of BLM lands and 211 acres of private lands.

Forty-three of the 65 cultural resources previously recorded within the Project APE were relocated during Pacific Legacy's 2018 investigations. These included three prehistoric archaeological sites; 17 historic period archaeological sites or built environment resources; seven multi-component resources, including one that was combined with a previously recorded prehistoric resource; and two isolated finds. Thirteen historic period survey markers associated with Highway 80 that had been previously recorded as distinct resources also were relocated but not individually re-recorded. Twenty-two cultural resources previously recorded within the Project APE were not relocated during the 2018 field effort, including 14 archaeological sites or built environment resources and eight isolated finds. Some were apparently disturbed or destroyed, others were mis-plotted in datasets maintained by the SCIC, and others had been mapped just within the Project APE but contained cultural constituents only outside of the APE. With the exception of the Plaster City Quarry and Plaster City Railroad, all of the previously recorded cultural resources relocated in 2018 were found along the proposed waterline between Ocotillo and Plaster City and/or the alternative waterline between Plaster City and the Westside Main Canal.

During the Class III pedestrian inventory and spot-check survey, 24 cultural resources were newly discovered. These included two prehistoric archaeological sites, 13 prehistoric isolated finds and nine historic period isolated finds. Nineteen of these resources, including both archaeological sites and 17 isolated finds, were found within the Plaster City Quarry. Three isolated finds were noted along the proposed waterline/powerline or within the area encompassing proposed Well No. 3 and two isolated finds were encountered along the proposed waterline between Ocotillo and Plaster City. The two newly discovered prehistoric archaeological sites have not been evaluated for listing in the NRHP and/or the CRHR.

Thirteen of the archaeological sites or built environment resources previously recorded within the Project APE and relocated in 2018 have been evaluated for listing in the NRHP and/or the CRHR through survey-level assessments conducted in support of other projects. One resource has been recommended eligible for listing in the NRHP and CRHR (P-13-000269), 10 have been recommended not eligible for listing in either register (P-13-008139, P-13-008418, P-13-009303, P-13-011629, P-13-011630, P-13-011631, P-13-011632, P-13-011633, P-13-011634, and P-13-011636), and portions of two resources have been alternatively recommended as eligible and not eligible for listing in the NRHP and CRHR (P-13-008334 and P-13-009302). Four additional resources (P-13-011626, P-13-011627, P-13-011628, and P-13-011635) reportedly required further assessment before an eligibility recommendation could be offered. According to available documentation provided by the SCIC, these eligibility recommendations have not been formalized by a Federal Lead Agency or the SHPO.

7.1 RECOMMENDATIONS

To the extent prudent and feasible, the BLM intends to avoid impacts to known archaeological sites and built environment resources within the Project APE. According to the 2014 Protocol Agreement,

> Where resources are identified but will be avoided by moving the project or by implementing protection measures, then, the BLM may treat cultural resources as eligible for inclusion in the National Register without formally evaluating or consulting with the SHPO for the purposes of that individual undertaking at that time. If the undertaking changes in any manner, a re-initiation of consultation as outlined under this Protocol should be undertaken. Avoidance treatments that rely on protection measures to preserve assumed eligible properties must ensure that all direct and indirect effects do not alter the characteristics of the property that would make it eligible and must ensure the qualifying characteristics of the integrity of the property are not diminished. Assuming a property as eligible and avoiding it neither precludes nor prejudices formal evaluation of the resource in the future (BLM and SHPO 2014:14).

Avoidance treatments and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan (Plan). This Plan will be prepared and approved prior to the implementation of the federal actions outlined in the SEIS. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts.

Worker awareness training will be directed by a qualified archaeologist prior to the start of ground disturbing activities associated with the Project to educate construction personnel about the kinds of cultural resources that may be encountered within the APE. This training will outline the protocols that must be followed to ensure avoidance of known cultural resources and proper treatment of inadvertent discoveries. Avoidance measures that may be employed could include the definition of exclusion or environmentally sensitive areas (ESAs) demarcated through fencing, signage, and/or engineering plans. In certain cases, capping may be appropriate to ensure avoidance of cultural resources—for instance, when an existing unpaved road that will be used for Project construction intersects a known archaeological site. Identifying the terms and conditions for archaeological monitoring will be critical to the Plan in order to ensure ESAs are properly established and enforced during ground disturbing activities within the APE.

Based on the Class III pedestrian inventory and spot-check survey results, it would appear that ten resources cannot be avoided given the extents of the current Project APE. One resource cannot be avoided even if the Project is redesigned. That resource is the Plaster City Quarry, which cannot be avoided because the quarry itself is the main focus of the Proposed Action. The nine remaining resources, however, may be avoided through Project redesign or through the use of the proposed waterline between Ocotillo and Plaster City instead of the alternative waterline between Plaster City and the Westside Main Canal. These resources include prehistoric sites P-13-000269 and P-13-002355; multi-component sites P-13-004391 and P-13-008323; historic period site P-13-011792; and historic period built environment resources P-13-008334 (Westside Main Canal), P-13-008418 (Highway 80), P-13-009302 (San Diego and Arizona Eastern Railroad) and P-13-009303 (Plaster City Plant). Of these resources, one (P-13-000269) has been recommended eligible, two have been recommended not eligible (P-13-008418 and P-13-009303), and four have not been evaluated (P-13-002355, P-13-004391, P-13-008323, and P-13-011792) for listing in the NRHP and/or the CRHR. Segments of two resources (P-13-008334 and P-13-009302) have alternatively been recommended both eligible and not eligible for listing in the NRHP and/or the CRHR. A National Register Nomination form was prepared by ASM Affiliates in 2012 for Highway 80, which includes several recorded segments that have been recommended not eligible for listing in the NHRP and/or the CRHR (P-13-008418). This form remains under review, however, and has not been submitted to the Keeper.

Upon review of this CRR and final engineering data, the BLM may determine that it is not feasible to avoid all known cultural resources within the Project APE. Following such a determination, the BLM will pursue measures outlined in the 2014 Protocol Agreement. These measures call for the evaluation of cultural resources that may be affected by the Project according to NRHP criteria (36 CFR Part 60.4); an assessment of effects to determine if historic properties will be adversely affected by the Project (36 CFR Part 800.5(a)(1); and, as necessary, consultation with the SHPO and any consulting parties.

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RE: US Gypsum Supplemental EIS Phase II, Cultural Resource Evaluation
for CA-IMP-7816/H (P-13-008323) (Project No. 3215-02)

Dear Ms. Crosmer:

In support of the US Gypsum Supplemental Environmental Impact Statement (EIS) for the US Gypsum Expansion/Modernization Project (the Project), Pacific Legacy, Inc. archaeologists revisited a previously recorded multi-component site (CA-IMP-7816/H; P-13-008323) that lies within the area of potential effects (APE) for a proposed alternative waterline between Plaster City and the Westside Main Canal in northwestern Imperial County, California. The aim in revisiting the site was to evaluate CA-IMP-7816/H for listing in the National Register of Historic Places (NRHP) and to determine if the Project would have an adverse effect or significant impact on the resource. All work was performed under contract to US Gypsum Company at the request of the US Department of the Interior, Bureau of Land Management (BLM), which serves as the lead federal agency for the Project. The Imperial County Board of Supervisors, acting as the state lead agency under the California Environmental Quality Act (CEQA), certified the Final Environmental Impact Report (EIR)/EIS for the Project in March 2008. All fieldwork for the evaluation of CA-IMP-7816/H was conducted during the week of July 2, 2018. Later archival and map research was performed by personnel from the Bay Area Division of Pacific Legacy in Berkeley, California.

Prior Investigation of Site CA-IMP-7816/H

Site CA-IMP-7816/H was first recorded in 1999 as a historic period “railroad stop” with associated features and historic period and modern debris located along both sides of BLM Road 151 and the San Diego and Arizona Eastern Railroad alignment (P-13-009302) (James, Bark and Caldwell 1999). The site was re-recorded in 2007 and interpreted as a temporary campsite along the railroad (McKenna 2007). A portion of CA-IMP-7816/H was documented again in 2008 by URS Corporation (Nixon 2008), though only artifacts along the south side of the railroad were recorded. The resource was re-characterized by URS personnel as a multi-component resource following the discovery of one bifacial granite handstone within the site’s boundaries.

In May 2018, Pacific Legacy personnel revisited CA-IMP-7816/H to verify the accuracy of the site’s boundaries within the Project APE for a proposed alternative waterline that extends between existing US Gypsum Company facilities in Plaster City and the Westside Main Canal (Pacific Legacy 2018). The APE for the proposed alternative waterline consists of an approximate 250-meter corridor that extends from just north of the Evan Hewes Highway (State

Route-80) to just south of the San Diego and Arizona Eastern Railroad alignment (P-13-009302). Pacific Legacy personnel found that the boundaries of CA-IMP-7816/H extended further north from the railroad tracks than was previously documented. The northern site boundary was therefore modified in May 2018, though the site boundary as it extends to the south outside of the APE was not explored (*see* Appendix A). In July 2018, Pacific Legacy personnel conducted a more thorough surface examination of the site to document the nature of the materials present as well as their density and diversity. No subsurface excavations were conducted.

Surface Inventory of Site CA-IMP-7816/H
Pacific Legacy archaeologists began their efforts in July 2018 by defining the limits of CA-IMP-7816/H, including those portions of the site that extended south and outside of the APE (*see* Appendices B and C). An intensive pedestrian survey using 3 to 5-meter transects was conducted across the site area. Three historic period debris concentrations or loci (Loci 1, 2, and 3) were documented to the north of the railroad alignment and one locus (Locus 4) was documented to the south of the railroad alignment. Site and locus boundaries were recorded using a handheld Trimble Geo 7X receiver. Locus 1, which measured 260 feet north-south by 75 feet east-west, was recorded immediately to the west of BLM Road 151. Twenty-seven diagnostic artifacts with manufacturer's marks were noted within the locus, mapped, and photographed. Non-diagnostic artifacts were noted and described. An erosional cut with materials extending to a depth of roughly 25 centimeters below the ground surface revealed that some of the cultural constituents within the locus had become partially buried by aeolian erosion. An existing east-west access road and a buried fiber-optic cable alignment cut through the site, paralleling the northern side of the railroad. That route appears to offer the least disruptive path through the recorded boundaries of the site, as it has been marked by prior subsurface disturbance.

An examination of the cultural constituents in Locus 1 revealed that they comprised mostly domestic debris, specifically cans (sanitary cans with church-key and rotary openings, oil cans with threaded metal tops, hole-in-top condensed milk cans, and steel pull-tab beverage cans with aluminum tops); bottle glass (clear, brown, teal, cobalt, and milk); and tablewares (domestic glazed earthenware and fiestaware), though other functional artifact categories also were represented (*see* Table 1). Personal artifacts included toys (a glass marble); clothing-related items (coiled wire coat hangers and leather shoe soles with nails); toothpaste containers; and alcohol bottles. Structural debris included bricks, nails, terracotta pipe fragments, and pieces of corrugated sheet metal. Transportation related items comprised mostly tire fragments. Based on the temporally diagnostic items present in Locus 1, the deposit appeared to date to the 1930s through the 1980s, with most items representing the 1940s to 1960s period. The spatial distribution of the materials in Locus 1 suggested that it was formed from at least 24 discrete deposition events.

Locus 2 of CA-IMP-7816/H was recorded approximately 25 feet southwest of Locus 1 to the north of the railroad alignment and immediately west of a large stand of vegetation. It measured 50 feet north-south by 40 feet east-west and encompassed at least two discrete deposition events. Some cultural constituents observed within Locus 2 were obscured by aeolian and alluvial erosion and were buried up to an estimated depth of 1 foot below the ground surface. The cultural materials in Locus 2 appeared to slightly post-date those in Locus

Table 1. Sample of Diagnostic Artifacts in Locus 1.

Artifact #	Description	Function	Date Range	Source
1	Brown glass bottle base with stippling; 2.5" diameter base. Marked: "2481/3 40/52/MTC" (Thatcher Manufacturing Company). The number '52' appears on the base, possibly a production date.	Indefinite	1944-1985; possibly 1952	Lockhart et al. 2007:9
2	Brown glass bottle base with stippling. 2.5" diameter base. Marked: "53-38A/3 [anchor logo] 52/49" (Anchor Hocking Glass Corp.). Factory code '3' indicates bottle produced in Winchester, Indiana.	Indefinite	1938-2011; possibly 1949 or 1952	Lockhart et al. 2013a:429, 433
3	5 gallon aqua glass spring water jug marked "…ACNETIC/SPRING WATER/CONTENTS FIVE GALLONS"	Domestic/Non-alcoholic Beverage Container	-	-
4	Olympia aluminum top steel can with pull-tab opening "Olympia/Please Don't Litter" on top.	Personal/Alcoholic Beverage Container	c. 1963-c. 1972	Martells 1976:9-10, 14-18
5	Colorless glass jar base fragment. Marked: "…1767-7/Ball (Ball Corp.).	Indefinite	Either c. 1933-1960 or c. 1960-present	Lockhart et al. 2013b:68
6	Ball mason jar base, circular suction mark in center, texturing on base. Marked: "233-32/7B/Ball" (Ball Corp.).	Indefinite	c. 1960-present	Lockhart et al. 2013b:68
7	Tall steel sanitary beverage can, church key opening, stamp on top "APR 1/1982/HC-1118". Measures 3 6/16" dia. X 7 9/16" tall.	Indefinite/Beverage Container	1982	Based upon stamped date
8	Clear glass Mexican soda bottle with Applied Color Label (ACL). Marked: "…RO.../REES.S.A.33609 "A"/[HE]CHO EN MEXICO/BEBIDA R..."	Domestic/Non-alcoholic Beverage Container	1934+	Jones and Sullivan 1989:16
9	Clorox brown glass jug shoulder and base fragments. Outlined Clorox maker's mark with grained texture on shoulder.	Domestic/Household Maintenance	1951-1962	Clorox 2018
10	WIE plate fragments with black printed leaf pattern.	Domestic/Tableware	-	-
11	Colorless glass bottle base; 3.5" diameter. Marked: "D9/83 [angular G over C] 41/M32 F52" (Glass Containers Inc.).	Indefinite	c. 1945-c.1967	Toulouse 1971:229; Giarde 1980:45
12	Rectangular bottle base. Marked: "7 [OI in diamond] 8/6" (Owens-Illinois Glass Company).	Indefinite	1938-1948	Toulouse 1971:403; Lockhart 2006:22-27
13	WIE bowl fragment. Marked: "W. S. George/White Granite" on base (W. S. George Pottery Company).	Domestic/Tableware	1904-1960 (possibly 1930s-1940s)	Lehner 1988:162-163
14	Colorless glass bottle base. Marked: "10-50/MG/13" (Maywood Glass Company).	Indefinite	c. 1958	Toulouse 1971:357

Artifact #	Description	Function	Date Range	Source
15	WIE plate fragment glazed ivory.	Domestic/ Tableware	-	-
16	Metal coffee can lid; 5' diameter. Stamped: "FOR DRIP OR VACU…COFFEE MAKERS"	Domestic/ Food Storage	-	-
17	Colorless glass jar base with suction mark. Marked: "PALOMAR FOODS/S [angular G over C] 0/3553/RE-USE PROHIBITED" (Glass Containers Inc.).	Domestic/ Food Storage	c. 1945-c.1967	Toulouse 1971:229; Giarde 1980:45
18	Colorless glass bottle base. Marked: "Duraglas/SUN/23 [OI in diamond] 5" (Owens-Illinois Glass Co.)	Indefinite	Post 1945-present	Toulouse 1971:304
19	Brown glass oval bottle base. Marked: "MTC 8/D-126/224S/49" (Thatcher Manufacturing Company).	Personal/alcoholic beverage	1944-1985	Lockhart et al. 2007:9
20	Colorless glass bottle base. Marked: "6738/[H over A]"	Indefinite	1920-1964	Toulouse1971:239
21	Colorless glass bottle base. Marked: "MADE IN U.S.A./1 24/12 [A in circle] 111/11" (Armstrong Cork Company).	Indefinite	1938-1969	Toulouse 1971:24
22	Colorless bottle base. Marked: "20 [OI in diamond] 0/3/3998 E" (Owens-Illinois Glass Co.).	Indefinite	1930-1950	Toulouse 1971:403; Lockhart 2006:22-27
23	Colorless glass bottle fragments, "house cleaner"	Indefinite	-	-
24	Triangular semi-translucent bottle base. Marked: "1337/[B in circle]/11" (probably Brockway Glass Co.).	Indefinite	1925+	Toulouse 1971:59
25	Fire Brick. Stamped "[GMB in an oval]/[three stars in a row]." (Gladding, McBean, and Co.).	Structural/Construction Material	1926-1935	Mosier 2015
26	Brown glass jug base. Marked: "[LM in oval]" (Latchford-Marble Glass Co.).	Indefinite	1939-1957	Toulouse 1971:332
27	Colorless glass bottle with crown finish. Marked: "Thirsty Just Whistle" and "23 [OI in diamond] 1" (Owens-Illinois Pacific Coast Co.).	Domestic/Non-alcoholic Beverage Container	1941-1970s	Toulouse 1971:406

1, and again they represented a mix of mostly domestic artifacts with lesser quantities of personal, structural, and transportation-related items. Domestic artifacts included green glass and other bottle fragments, straight side-seamed beverage cans, ceramic tablewares, and saw-cut faunal bone. Personal items were represented by nine amber glass beer bottles (Artifact 28) and socks, while structural items included shaped concrete fragments and roof shingles. Transportation-related items were represented by rubber tire fragments. A steel cable of indefinite function also was recorded (*see* Table 2). Diagnostic artifacts noted within Locus 2 suggested that deposition occurred between the 1930s and 1970s, with clustering in the 1940s to 1950s period.

Locus 3 of CA-IMP-7816/H was recorded immediately east of BLM Road 151 and north of the railroad alignment. It measured 90 feet north-south by 57 feet east-west and appeared to comprise a single deposition episode. Like Loci 1 and 2, Locus 3 contained primarily domestic

Table 2. Sample of Diagnostic Artifacts in Locus 2.

Artifact #	Description	Function	Date Range	Source
28A	Brown glass beer bottle with crown finish. Marked: “20 [OI in diamond] 51/7D/Duraglas/1-Way/2766 6D” (Owens-Illinois Glass Co,).	Personal/Alcoholic Beverage Container	1951	Toulouse 1971:403; Lockhart 2006:22-27
28B	Brown glass beer bottle with crown finish. Marked: “S [angular G over C] 1/ 1-WAY/4808/90” on base; on neck: “Not to be Refilled, No Deposit, No Return” (Glass Containers Inc.).	Personal/Alcoholic Beverage Container	c. 1945-c.1967	Toulouse 1971:229; Giarde 1980:45
28C	Brown glass beer bottle with crown finish. Marked: “[L in keystone logo]/51.” (Lincoln Bottle Glass CO.).	Personal/Alcoholic Beverage Container	1942-1952	Whitten 20118
28D	Brown glass beer bottle with crown finish. Marked: “21 [OI in diamond] 3”, no knurling on base.	Personal/Alcoholic Beverage Container	c. 1933-1953	Toulouse 1971:403; Lockhart 2006:22-27
29	WIE bowl base. Marked: “[S]TONEWARE/JAPAN”	Domestic/Tableware	1921-1940, post 1952	Stitt 1974:149
30	Ceramic plate base fragment glazed yellow with decal linear design band on rim. Stamped “USA” on base.	Domestic/Tableware	c. 1950s-1960s	Stylistic decoration.
31	Brown glass oval bottle base. Marked: “A.A./0-9/101 [OI in diamond] 51/11-821A”	Likely Personal/Alcoholic Beverage Container	1951	Toulouse 1971:403; Lockhart 2006:22-27
32	Colorless tumbler with ACL figural image marked “PENNY/The Rescuers/Collector/Series © 1977 Walt Disney/Productions”	Domestic/Tableware	1977	Copyright date
33	Colorless glass bottle base Marked: on heel “TEQUILA/…ORENDIAN”; on base “4 [checkmark logo] 23”	Personal/Alcoholic Beverage Container	-	-
34	Brown glass bottle with ribbing. ACL logo: “ORANGE-/CRUSH/T.M.REG. U.S.PAT./COMPANY/BOTTLE”. Marked: “9 [OI in diamond] 3./Duraglas” on base.	Domestic/Non-alcoholic Beverage Container	1943	Toulouse 1971:403; Lockhart 2006:22-27
35	Brown glass half pint liquor bottle. Marked: “D125/56 51/[OI in diamond]” (Owens-Illinois Glass Co.).	Personal/Alcoholic Beverage Container	c. 1951	Toulouse 1971:403; Lockhart 2006:22-27
36	Brown glass bottle base. Marked: “9 [OI in diamond] 48/Duraglas/X 2130”	Indefinite	1948	Toulouse 1971:403; Lockhart 2006:22-27
37	WIE plate fragment with grey scrollwork decal design on aqua rim band. Basemark: “…timo China Co./[semi]-vitreous/…, Ohio”	Domestic/Tableware	-	-
38	Porcelain plate base. Marked: “Translucent Porcelain China/[Crown logo]/Royal [Crown?]/China Co./Japan/Imported Fine Quality”	Domestic/Tableware	-	-
39	WIE cup with grey scrollwork decal design on aqua rim band, matches A 37.	Domestic/Tableware	-	-
40	Vent-hole condensed milk can. Measures 2 9/16” diameter x 2 5/16 “ tall. Possibly Type 20 can.	Domestic/Non-Alcoholic Beverage Container	1950-c. 1985?	Simonis 1997

artifacts with some personal and structural items or items of indefinite function. Domestic items within the locus included colorless and green bottle glass, sanitary cans, steel beverage cans, tin foil, and aluminum-top, steel-sided cans. Personal items were represented by alcohol-related brown bottle glass and crown-cork bottle caps while structural items included brick fragments, asphalt tiles, and a metal screen. Sheet metal fragments of indefinite function also were recorded (*see* Table 3). Diagnostic artifacts noted within Locus 3 indicated that deposition occurred between the 1930s and 1970s, with most items representing the 1940s to 1950s period.

Table 3. Sample of Diagnostic Artifacts in Locus 3.

Artifact #	Description	Function	Date Range	Source
41A	Brown glass beer bottle with crown finish. Marked: “63-36 A/3 [anchor logo] 52/13” with stippled base (Anchor Hocking Glass Corp.).	Personal/Alcoholic Beverage Container	1938-present; possibly 1952	Toulouse 1971:48
41B	Brown glass beer bottle with crown finish. Marked: “2481/S 19/52/MTC” with stippled base (Thatcher Manufacturing Company).	Personal/Alcoholic Beverage Container	1944-1985; possibly 1952	Lockhart et al. 2007:9
41C	Brown glass beer bottle with crown finish. Marked: “2481/S 19A/52/MTC/TALL/1-WAY” with stippled base (Thatcher Manufacturing Company).	Personal/Alcoholic Beverage Container	1944-1985; possibly 1952	Lockhart et al. 2007:9
41D	Brown glass beer bottle with crown finish. Marked: “2481/S 18/52/MTC” with stippled base (Thatcher Manufacturing Company).	Personal/Alcoholic Beverage Container	1944-1985; possibly 1952	Lockhart et al. 2007:9
42	Colorless glass food storage jar (likely condiment) with a threaded finish. Marked: “17 [OI in diamond] 2” (Owens-Illinois Pacific Coast Co.).	Domestic/Food Container	c. 1932-1943	Toulouse 1971:406
43	Colorless glass food storage jar with threaded finish. Marked: “4412/[J in keystone]/8” (Knox Glass Bottle Co.).	Domestic/Food Container	1932-1953	Toulouse 1971:271
44	Colorless glass food storage jar with threaded finish. Marked: “804/[LM in circle]/5” (Latchford-Marble	Domestic/Food Container	1939-1957	Toulouse 1971:332
45	Aqua glass Coca Cola bottle. Marked: “25 [OI in diamond] 45 on heel; “Los Angeles/Calif./S” on base.	Domestic/Non-Alcoholic Beverage Container	1945	Toulouse 1971:403; Lockhart 2006:22-27
46	Colorless glass bottle finish fragment.	Indefinite	-	-
47	Brown glass beer bottle. Marked: “20 [OI in diamond] 3/23/Duraglas” (Owens-Illinois Glass Co.).	Personal/Alcoholic Beverage Container	1943-1953	Toulouse 1971:403; Lockhart 2006:22-27

Locus 4 of CA-IMP-7816/H was recorded to the south of the San Diego and Arizona Eastern Railroad alignment (P-13-009302). Because it lay outside of the Project APE, less emphasis was placed on the analysis or photo-documentation of individual artifacts in Locus 4, though its extents were mapped and recorded. The site record completed for the northern portion of the locus by URS personnel in 2008 was found to be accurate (Nixon 2008), though its boundaries extended further south than was previously noted. As recorded in July 2018, Locus 4 measured approximately 200 feet north-south by 400 feet east-west and appeared to encompass at least 12 discrete deposition events. Cultural constituents noted in Locus 4 largely mirrored those noted in Locus 2. They comprised mostly domestic artifacts (e.g., beverage or food containers, glass fragments, and ceramic tablewares) with lesser quantities of personal items (e.g., alcohol and medicine bottles, aerosol cans, and a flask), structural debris (e.g., dry wall fragments, brick fragments, concrete fragments, screws, and nails), transportation-related items (e.g., tire fragments), and items of indefinite function (e.g., cable, wire, paint cans, and miscellaneous glass and metal fragments). Diagnostic artifacts noted within Locus 4 suggested that deposition occurred between the 1930s and 1980s, with clustering in the 1940s to 1950s period. The prehistoric isolated find recorded by URS personnel in 2008 was not relocated, and no additional prehistoric artifacts were noted in 2018.

Interpretations of Site CA-IMP-7816/H

Loci 1, 2, and 3 of CA-IMP-7816/H all appeared to represent roadside discard along BLM Road 151 or along the access road that roughly parallels the north side of the San Diego and Arizona Eastern Railroad alignment (P-13-009302). Locus 4, located to the south of the railroad alignment, also appeared to represent repeated roadside discard. Locus 4 is bisected by BLM Road 151 and by an east-west trending access road that together divide the locus into four areas. Although a limited amount of structural debris was noted in each of the four loci, they consisted largely of domestic artifacts with lesser quantities of personal items, transportation-related items, and artifacts of indefinite function.

No evidence of former standing structures was noted within the boundaries of CA-IMP-7816/H, and it seems unlikely that the site served as a historic period railroad stop as initially posited in 1999 (James, Bark, and Caldwell 1999). The railroad alignment was constructed between 1907 and 1919, and the nearest railroad stop was located roughly 3 miles to the west in Plaster City. Passenger service along the San Diego and Arizona Eastern Railroad ceased in 1951, and the line was abandoned in 1977 (Fickewirth 1992:121). Cultural constituents noted within the four site loci indicated that deposition occurred well after the construction of the railroad alignment and towards the end of its period of operation, so it also seems unlikely that the site functioned as a workers camp for the railroad or as a “temporary camp” as argued by J. McKenna (2007). Instead, it seems most likely that CA-IMP-7816/H served as an informal trash dump for multiple nearby households that was used most intensively during the mid-20th century.

The Project area that encompasses the proposed alternative waterline was settled mostly in the early 20th century as irrigation systems were being developed and agricultural opportunities in the region expanded (Pacific Legacy 2018). El Centro was the nearest larger town, but several smaller settlements also developed along the railroad and highway alignments. These included Plaster City, located approximately 3.6 miles west of CA-IMP-7816/H, as well as Dixieland, located just 1 to 1.5 miles to the east of the site location. Plaster City was developed as a US Gypsum Company town in the early 1920s adjacent to the San Diego and Arizona Eastern Railroad alignment (P-13-009302). An ore crusher was initially located at the site, and a narrow gauge railroad was built to move ore to the crusher for shipment. In 1924, a plaster manufacturing plant was installed and a town was built around it for the employees (Tucker 1926:271). The Plaster City post office operated between 1924 and 1964 (Forte 2018). The 1942 State Mineralogist report noted that the Plaster City plant operated three days a week with 15-

20 employees manufacturing fertilizer, cement retardant, hard wall and finished building plasters, casting molding, and dental plaster (Sampson and Tucker 1942:136).

Dixieland was named in 1909 by land promoters hoping to attract cotton agriculture using the newly planned west side irrigation system (Gudde 2004:110). A post office operated in the small, unincorporated community between 1912 and 1935 (Forte 2018). The expanded irrigation system was never built, however, and the town never fully developed (URS 2010:2-35). Dixieland was depicted on the 1940 Plaster City USGS 1:62,500 topographic map less than 1.5 miles east of CA-IMP-7816/H and just east of the Westside Main Canal, though three historic period structures were shown just west of the canal in Section 7 of Township 16 South, Range 12 East approximately 1 mile east of the site area. Historic period aerial photographs from 1953 confirmed that settlement and agricultural fields were concentrated to the east of the Westside Main Canal, with little development to the west side of the canal near the highway or railroad alignments until sometime after the mid-1950s. BLM Road 151 also was depicted on the 1940 Plaster City USGS 1:62,500 topographic map, and was likely used by nearby residents who frequented the Evan Hewes Highway (USGS 1940).

Site CA-IMP-7816/H is located in the northeast quarter of the southeast quarter of Section 11 and the northwest quarter of the southwest quarter of Section 12 in Township 16 South, Range 11 East, San Bernardino Base & Meridian. A search of land patents for the site area showed that the quarter sections surrounding the site were patented to the Santa Fe Pacific Railroad Company in 1911 and 1915 (BLM 2018). No private individuals acquired patents for the lands surrounding the site until 1964, when a patent was issued to Ms. Kitty Nichols for the northwest quarter of Section 12. Beginning the mid-1990s, the northwest quarter of Section 12 was developed as the “Imperial Lakes” gated community, which is located to the north of the Evan Hewes Highway less than 0.25 miles from CA-IMP-7816/H. The community features two man-made lakes used for waterskiing that are bordered to the east and west by private residences and served by an internal, private road.

Given the date ranges of the temporally diagnostic artifacts noted within the boundaries of CA-IMP-7816/H, the high frequency of domestic items versus other functional artifact classes present, and the proximity of the debris deposit to a known residential area in the vicinity, it seems most likely that CA-IMP-7816/H was associated with the unincorporated community of Dixieland. BLM Road 151 appeared to pre-date the discard events encompassed by the site loci. The road would have been easily accessible from the Evan Hewes Highway and would have offered a discrete location to discard household debris away from the residences in Dixieland.

Historic period secondary debris deposits can range from extensive sites used by multiple households, institutions, or communities over the course of decades to small scatters with little indication of when or where they originated. Debris deposits that are found in association with other historic period resources, for instance a homestead or mining complex, are typically examined and evaluated as a part of that larger resource. Debris deposits encountered in isolation or as roadside discard locations are typically evaluated based on the quantity and diversity of materials they contain, as well as the ability to associate those materials with known individuals or communities, with a particular period of deposition, or with a specific type of site use (e.g., municipal dumps, workers’ camps, mining complexes, etc.). The sections below briefly outline the eligibility criteria for listing cultural resources in the NRHP and offer an evaluation of CA-IMP-7816/H with respect to those criteria. Site CA-IMP-7816/H was not evaluated for listing in the California Register of Historical Resources in support of the current investigation.

NRHP Eligibility Criteria

As a federal undertaking, the Project must comply with Section 106 of the National Historic Preservation Act (NHPA) (54 USC 300101 et seq., as amended), and the BLM is required to take into consideration the effects of the proposed action on historic properties. Per 36 CFR Part 800.16(l)(1) a historic property is defined as

> any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Implementing regulations for the NHPA put forth by the Advisory Council on Historic Preservation may be found under 36 CFR Part 800. Those regulations describe the steps that federal lead agencies must take to identify and evaluate potential historic properties, assess potential adverse effects to those properties that may occur through the implementation of an undertaking, and outline steps that may be taken to resolve potential adverse effects through avoidance or appropriate mitigation measures.

Criteria for determining NRHP eligibility are found in 36 CFR Part 60. The NRHP is "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR Part 60.2). Eligibility for inclusion in the NRHP is determined by applying the following criteria, which were developed by the National Park Service in accordance with the NHPA and outlined in 36 CFR Part 60.4:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
> B) That are associated with the lives of persons significant in our past; or
> C) That embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> D) That have yielded, or may be likely to yield, information important in prehistory or history.

Any prehistoric or historic period district, site, building, structure, or object that meets one or more of the criteria above and possesses sufficient integrity may be eligible for inclusion in the NRHP as a historic property.

The BLM executed a national Programmatic Agreement (PA), on February 9, 2012, (Part 2) with the ACHP and the National Council of State Historic Preservation Officers (SHPOs). The PA governs the manner in which the BLM meets its responsibilities under the NHPA and directs each BLM State Director to develop a mutually agreed upon Protocol with each SHPO in their respective jurisdictions. The PA encourages BLM State Directors and SHPOs to develop mutually agreed upon BLM-SHPO protocols regulating their relationship and how consultation will take place by establishing streamlined (as opposed to case-by-case) consultations. Since California BLM administers land in California and Nevada, the Protocol was negotiated by the California State Director of the BLM with the California SHPO and the Nevada SHPO in 2014. The applicable standards for this Project are found under the *Secretary of the Interior's Guidelines for Identification* on pages 69-71 of the 2014 Protocol Agreement.

NRHP Evaluation of CA-IMP-7816/H

Site CA-IMP-7816/H is an extensive historic period debris deposit comprised of mostly domestic refuse that may have originated from the unincorporated community of Dixieland. The site appears to have formed as a result of more than three dozen discrete deposition events that occurred between the 1930s and 1970s, with most materials deposited in the 1940s to 1950s period. Sullivan and Griffith (2005) prepared a context statement and guide for recording and evaluating historic period waste management and refuse deposits. They identified a number of different waste disposal site types, including trash scatters/middens, privies, wells, dumps, waste piles, and open dumps. Under their schema, CA-IMP-7816/H would be classified as an “open dump,” which is defined as a waste disposal area that occurs at a distance from where the debris was first generated, is marked by repeated dumping episodes by more than one party, and is recognized as part of a formal or informal waste disposal system. According to Sullivan and Griffith (2005:34):

> Open dumps occur at different scales and have different time depth. They may be associated with smaller properties such as ranches and farms, a single or multiple business(es) and industry(ies), or military installations that have used a single area for the dumping of trash over a period of time. At its largest scale, an open dump is associated with a town or city (communal). A mining camp, military post, etc. may use a designated dump intensively for a few years, while a community may use a designated dump area for decades.
>
> Materials in an open communal dump will represent a range of different activities while materials at an industrial site may reflect limited activities. Garbage deposits may be primarily concentrated in one area, dispersed widely over an area, or made up of a number of distinct smaller concentrations (loci) of trash deposits. Although community dumps are usually located at a distance from the generators, the source of the trash is usually easily identifiable because of the dump’s size, general proximity to a populated center, and volume and character of diagnostic artifacts.

Sullivan and Griffith (2005) noted that open dumps may be eligible for listing in the NRHP under any of the eligibility criteria, but will most often be eligible under NRHP Criterion D for their research and data potential.

To be eligible for listing under NRHP Criterion A, an open dump would need to be associated with an important historic period event such as a major shift in waste disposal management in a community, major policy changes, or significant technological innovations that resulted in changes in waste management policies or practices. Site CA-IMP-7816/H does not appear to have been associated with any significant historic period events. It appears to have been informally used over decades beginning in the 1930s, and it reflects no apparent shifts in local, regional, or national practices, policies, or modes of waste management. Site CA-IMP-7816/H is thus recommended not eligible for listing in the NRHP under Criterion A.

To be eligible for listing under NRHP Criterion B, an open dump site would need to be clearly associated with one or more individuals significant to the history of the region, the state, or the nation. No individuals, historically significant or otherwise, were identified in association with CA-IMP-7816/H. Although the site appears to be associated with the unincorporated community of Dixieland based on its proximity to that community, the prevalence of domestic artifacts at the site, and the site's position along a road that was likely used by Dixieland residents, a clear link could not be defined between the site and one or more members of that community. A review of land patents for the area surrounding the site also failed to reveal any individuals that might have been associated with site during the main period of deposition in the 1940s and 1950s. Site CA-IMP-7816/H is therefore recommended not eligible for listing in the NRHP under Criterion B.

In order to be eligible for listing in the NRHP under Criterion C, CA-IMP-7816/H would need to embody distinctive characteristics of design or construction. Open dumps, unless they employ cut and fill methods, are usually not designed or constructed features. Although portions of CA-IMP-7816/H have become partially buried through aeolian and alluvial erosion, there is no evidence to suggest that cut and fill methods were used at the site. Because CA-IMP-7816/H contains no designed or engineered features that might be evaluated under NRHP Criterion C, it is recommended not eligible for listing under those criteria.

Historic period open dumps typically feature a high density and diversity of artifacts. They can offer data potential relating to historic period research themes such as socio-economic status, trade, production, ethnicity, gender, diet, health or hygiene, technology, and demography. Site CA-IMP-7816/H consists of an extensive historic period debris deposit or open dump with four loci. It contains glass bottles and fragments; ceramic tablewares; saw cut bone; food, beverage, and paint cans; wire, screws, nails, and other miscellaneous metal debris; bricks, concrete, and drywall fragments; rubber tire fragments; and many other non-diagnostic items. Diagnostic artifacts and the distribution of cultural materials across the site revealed that it was likely formed through at least three dozen discrete deposition events that occurred between the 1930s and 1980s, with most materials deposited in the 1940s and 1950s period. Although CA-IMP-7816/H offers some clues about the consumption and discard habits of local residents in the mid-20th century, it offers little overall data potential. The site could not be clearly linked to specific local residents or to a single local community. Any interpretive value it might offer would thus be lessened by a lack of integrity of association. Site CA-IMP-7816/H also consists overwhelmingly of domestic refuse with some personal, transportation-related, and indeterminate items. The domestic lives and practices of mid-20th century communities are fairly well documented and understood. The further study of such communities through a single open dump site in rural Imperial County would likely add little to our understanding of local, regional, or nation history. Site CA-IMP-7816/H is therefore recommended not eligible for listing in the NRHP under Criterion D.

Site Integrity

Site CA-IMP-7816/H is a historic period debris deposit that contains materials dating from the late 1930s to the 1980s, though the bulk of the deposit is represented by artifacts from the 1940s to 1950s. Following Sullivan and Griffith (2005), the site appears to represent an open dump that has accrued informally through at least three dozen deposition events. Three access roads intersect the site, with BLM Road 151 bisecting the site from north to south and two access roads near the railroad alignment bisecting the site from east to west. Site CA-IMP-7816/H was found to be in fair condition when it was recorded in July 2018 despite impacts from aeolian and alluvial erosion and some modern roadside trash dumping.

While the site retains aspects of integrity relating to location and setting, the aspects of feeling and association are diminished by the resource's lack of clear association with persons, places, or events that may have helped to convey its history. As an open dump, aspect of design, materials, and workmanship are not applicable, as the site includes no designed or constructed features such as cut and fill waste disposal pits. Overall, CA-IMP-7816/H retains poor integrity. Because it could not be associated with important events or persons in history (NRHP Criteria A and B), it lacks construction or design characteristics that would render it significant (NRHP Criterion C), it offers extremely limited data potential (NRHP Criterion D), and it possesses limited integrity. Therefore, CA-IMP-7816/H is recommended not eligible for listing in the NRHP.

Conclusions and Recommendations

Site CA-IMP-7816/H has been recommended not eligible for listing in the NRHP. No further studies and no specific management measures are recommended at the site. By routing the waterline along the existing access road and buried fiber optic line just north of the railroad alignment, however, the majority of the site loci would be avoided (*see* Attachment B). Pacific Legacy has revised the site record for CA-IMP-7816/H to reflect its updated boundaries (*see* Attachment A). The proposed alternative waterline route that would avoid impacting much of the resource is depicted in Appendix B, Figure 2. Pacific Legacy will also provide the BLM with GIS shapefiles of the proposed route. Should you have further questions, please do not hesitate to contact me.

Lisa Holm

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Attachments
Attachment A: Site Records
Attachment B: Figures
Attachment C: Photographic Record

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Appendix A: Site Records (Confidential)

Attachment B: Figures (Confidential)

Attachment C: Photographic Documentation

Attachment C: Pacific Legacy Photographic Documentation

Client: US Gypsum Company

Prepared by: L. Holm

Photograph No. 1
Direction: West
Date: 7/4/18
Location: Alternative Waterline Between Plaster City And The Westside Main Canal
Photographer: William Shapiro

Description:
(DSCF-9919) Close-up of erosional cut showing buried cultural constituents in Locus 1 of CA-IMP-7816/H.

Photograph No. 2
Direction: East
Date: 7/5/18
Location: Alternative Waterline Between Plaster City And The Westside Main Canal
Photographer: William Shapiro

Description:
(DSCF -9921) Overview from the eastern edge of CA-IMP-7816/H showing the preferred pipeline route marked by an existing access road and buried fiber optic cable.

Attachment C: Pacific Legacy Photographic Documentation

Client: US Gypsum Company

Prepared by: L. Holm

Photograph No. 3
Direction: South
Date: 7/5/18
Location: Alternative Waterline Between Plaster City And The Westside Main Canal
Photographer: William Shapiro

Description: (DSCF -9928) Overview of Locus 2 at CA-IMP-7816/H.

Photograph No. 4
Direction: East
Date: 7/5/18
Location: Alternative Waterline Between Plaster City And The Westside Main Canal
Photographer: William Shapiro

Description: (DSCF -9975) Overview of Locus 3 at CA-IMP-7816/H.

Photograph No. 5
Direction: ---
Date: 7/5/18
Location: Alternative Waterline Between Plaster City and The Westside Main Canal
Photographer: William Shapiro

Description:
(DSCN-9965) Close-up of white improved earthenware cup (Artifact 39) and plate fragment (Artifact 37) found in Locus 2 of CA-IMP-7816/H.

Photograph No. 6
Direction: ---
Date: 7/5/18
Location: Alternative Waterline Between Plaster City and The Westside Main Canal
Photographer: William Shapiro

Description:
(DSCN-9906) Close-up of clear glass triangular bottle base (Artifact 24) found in Locus 1 of CA-IMP-7816/H. Likely manufactured by Brockway Glass Co., 1925+.

Attachment C: Pacific Legacy Photographic Documentation

Client: US Gypsum Company Prepared by: L. Holm

Photograph No. 7
Direction: ---
Date: 7/5/18
Location: Alternative Waterline Between Plaster City and The Westside Main Canal
Photographer:
William Shapiro

Description:
(DSCN 9914) Close-up of "Thirsty Just Whistle" bottle fragments (Artifact 27, ca. 1941-1970s) found in Locus 1 of CA-IMP-7816/H.

Photograph No. 8
Direction: ---
Date: 7/5/18
Location: Alternative Waterline Between Plaster City and The Westside Main Canal
Photographer:
William Shapiro

Description:
(DSCN-9978) Close-up of four brown beer bottles (Artifacts 41 A-D, ca. 1952) found in Locus 3 of CA-IMP-7816/H.

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August 14, 2018

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El Centro Field Office
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RE: US Gypsum Supplemental EIS Inventory Survey for Avoidance of CA-IMP-2355, CA-IMP-4391/H, and CA-IMP-269 (Project No. 3215-02)

Ms. Crosmer:

In support of the US Gypsum Supplemental Environmental Impact Statement (EIS) for the US Gypsum Expansion/Modernization Project (the Project), Pacific Legacy, Inc. archaeologists revisited three previously recorded sites that lie within the area of potential effects (APE) for a proposed 8.7-mile waterline between Ocotillo and Plaster City and a 5-mile proposed alternative waterline between Plaster City and the Westside Main Canal in northwestern Imperial County, California. The aim in revisiting these sites was to determine if they could be avoided by Project ground disturbing activities through careful routing of both waterlines. All work was performed under contract to US Gypsum Company at the request of the US Department of the Interior, Bureau of Land Management (BLM), which serves as the lead federal agency for the Project. The Imperial County Board of Supervisors, acting as the state lead agency under the California Environmental Quality Act (CEQA), certified the Final Environmental Impact Report (EIR)/EIS for the Project in March 2008. Supplementary fieldwork for this report was conducted during the week of July 2, 2018. Later spatial data analysis was performed by personnel from the Bay Area Division of Pacific Legacy in Berkeley, California.

The resources revisited in July 2018 included prehistoric site CA-IMP-2355 (P-13-002355), multi-component site CA-IMP-4391/H (P-13-004391), and prehistoric site CA-IMP-269 (P-13-000269). Supplementary work at these sites was requested by the BLM and approved after the review of Pacific Legacy's proposal dated June 22, 2018. Field inspections were conducted by a two-person crew, which included William Shapiro, MA, and Christopher Peske, BA. They performed a pedestrian surface examination of the three resources and the areas noted below. Redefined site boundaries were recorded on appropriate California Department of Parks and Recreation (DPR) Forms 523 based on updated observations (*see* Appendix A). Field personnel were provided with location information on Trimble Geo7X GPS receivers and on topographic maps and aerial photographs showing the locations of previously recorded cultural resources within the Project APE. After an examination of the resources and a discussion with Katherine Crosmer, BLM Archaeologist with the El Centro Field Office, Pacific Legacy archaeologists plotted the resource locations using a GPS receiver and documented the nature and extent of each resource. Potential waterline routes that would avoid each resource were mapped in consultation with Ms. Crosmer during her field visit on July 3, 2018. The results of these efforts are detailed below.

CA-IMP-2355 (P-13-002355)
CA-IMP-2355 is located to the south of the Evan Hewes Highway (P-13-008418 or Highway 80) within the APE for the proposed Ocotillo to Plaster City waterline. It was first recorded in 1977 as a prehistoric lithic scatter with six pieces of light green porphyry debitage. During a Class III pedestrian inventory survey conducted by Pacific Legacy personnel in April and May 2018, only one piece of green debitage was noted at the west end of the site location (Pacific Legacy 2018). Additionally, a concentration of at least 12 pieces of mostly umber-colored crypto-crystalline (CCS) debitage was identified along with three concentrations of pottery fragments. The site appears to have been impacted by the construction of the Evan Hewes Highway, as prehistoric pottery fragments were found in a cut bank eroding downslope towards the highway. The site lies on a terrace with patches of desert pavement and is bisected by a dirt off-highway vehicle trail.

CA-IMP-2355 was revisited by Pacific Legacy archaeologists on July 2, 2018. Particular attention was focused on the southern boundary of the site south and outside of the original 50-foot APE corridor for the Ocotillo to Plaster City waterline. No evidence of cultural materials were observed in this area. In consultation with the BLM archaeologist, it was determined that in order to avoid the resource, the proposed waterline could be placed to the south of the recorded site boundary and to the north Interstate 8. The preferred alternative is shown in Attachment B, Figure 1. This preferred alternative would loop south near the east end of the site parallel to the north side of Interstate 8 in a southwesterly direction, then tie-in to the original APE route as it proceeds southwest. The route would follow an existing wash and off-highway vehicle road as it parallels Interstate 8 and would avoid impacts to the resource. An updated site record for CA-IMP-2355 is provided in Attachment A.

A second potential avoidance route may be at the base of the cut bank on the southern shoulder of the Evan Hewes Highway. Inspection of the north side of the site on top of the terrace resulted in the recordation of 12 pieces of CCS debitage, suggesting that the Evan Hewes Highway has bisected the site in a southwest/northeast direction. The cut bank of the Evan Hughes Highway is approximately 3-4 meters from the terrace on which the site sits. Cultural materials were found eroding from the cut bank on the northwest side of the site along the shoulder of the Evan Hewes Highway. It is not clear if the artifacts noted on the shoulder are part of a subsurface deposit that extends below the shoulder.

CA-IMP-4391/H (P-13-004391).
CA-IMP-4391/H is located within the APE for the proposed alternative waterline between Plaster City and the Westside Main Canal. It lies to the south of the Evan Hewes Highway (P-13-008418 or Highway 80) and to the north of the San Diego and Arizona Eastern Railroad alignment (P-13-009302). The site was first documented in 1981 as a historic period debris scatter (Townsend and Fulmer 1981). It was later re-recorded by URS in 2008 and in 2009 when it was described as a multi-component site with a prehistoric lithic and ceramic scatter and a 1900-1920s historic period debris scatter with metal, ceramics, glass, and cans as well as a series

of berms and depressions. URS recommended data recovery efforts at the site in 2009 to determine its eligibility for listing in the National Register of Historic Places (NRHP) (Albush 2009). In April 2018, Pacific Legacy personnel found the site to be as previously described, though approximately 16 pottery fragments and one piece of CCS debitage were found beyond the northeastern boundary of the site as it was defined in 2009. The site boundary was therefore expanded approximately 30 meters to the northeast to include these debitage and pottery fragments (Pacific Legacy 2018). The pottery fragments varied from gray to red in color and measured 2.0-5.5 centimeters in size and 0.5 centimeters in thickness. The northern edge of CA-IMP-4391/H is near the Evan Hewes Highway alignment, and the prehistoric component of the site is likely associated with prehistoric site CA-IMP-10171 (P-13-011165), which is across the Evan Hewes Highway to the north. The area around CA-IMP-4391/H has been impacted by off-highway vehicle activity and by aeolian and alluvial erosion.

CA-IMP-4391/H was revisited by Pacific Legacy archaeologists on July 3, 2018. Particular attention was focused on the southern boundary of the site north and adjacent to the San Diego and Arizona Eastern Railroad (*see* Attachment B, Figure 2). The site boundary was slightly expanded to the southwest to include a group of four handstones observed in July 2018. These artifacts are not located in the preferred or suggested avoidance route. In consultation with the BLM archaeologist, it was determined that in order to avoid the resource, the proposed alternative waterline between Plaster City and the Westside Mail Canal could be placed within or adjacent to the disturbed San Diego and Arizona Eastern Railroad right-of-way along an existing dirt access road. The access road right-of-way has been previously disturbed through the installation of an underground fiber optic line, and further ground disturbing activity along the same alignment should not impact CA-IMP-4391/H. An updated site record for CA-IMP-4391/H is provided in Attachment A.

CA-IMP-269 (P-13-000269)

CA-IMP-269 is located within the APE for the proposed alternative waterline between Plaster City and the Westside Main Canal. It was first recorded by Ackers, Avels, and Collins in 1976 as a series of seven archaeological sites that were ultimately combined and extended to encompass multiple sections on the USGS 7.5-minute Plaster City topographic map by 2016. Portions of CA-IMP-269 have been re-recorded numerous times, though URS produced the most extensive documentation for the site in 2009 (Kowalski 2009). The 2009 site record documented at least 64 features, including hearths, rock cairns, and one cremation. Cultural constituents included lithic scatters with formal artifacts such as projectile points, cores, bifaces, edge-modified flakes, choppers, and performs; groundstone implements such as handstones, milling slabs, hammerstones, and sandstone manuports; *Olivella* shell beads; fire-affected rock; and calcined human and faunal bone fragments, including some identified in hearth features. Although the site boundary for CA-IMP-269 provided by the SCIC spans multiple sections and corresponds to the location map boundary for the site produced by ASM Affiliates in 2016 (J. Lennen), the 2009 URS location map for the resource is much more constrained and depicts the resource and its features predominantly in Sections 9 and 16 to the south of the San Diego and Arizona Eastern Railroad (P-13-009302) alignment and outside of the Project APE (Kowalski 2009). URS (Kowalski 2009) offered no formal evaluation of CA-IMP-269, but suggested that the site may be eligible for listing in the NRHP under Criterion D, or its potential to reveal intact, subsurface deposits with significant research or data potential.

The Project APE for the proposed alternative waterline intersects the current boundary of CA-IMP-269 from just north of the Evan Hewes Highway (P-13-008418 or Highway 80) to just south of the San Diego and Arizona Eastern Railroad (P-13-009302) alignment in Section 10 between the Plaster City Plant and Westside Main Canal. The individual prehistoric and multi-component sites that intersect the Project APE and CA-IMP-269 boundary were revisited by Pacific Legacy personnel in May 2018 for the initial survey (Pacific Legacy 2018). Although these resources were encompassed by the 2016 boundary of CA-IMP-269, they were not formally documented as part of that larger resource. Based on the documentation provided by ASM in 2016 and URS in 2009, it was difficult to discern what previously recorded resources corresponded to or lay within the boundary of CA-IMP-269 as currently defined by the SCIC. Pacific Legacy archaeologists therefore re-recorded these 13 archaeological sites in May 2018 as individual resources (CA-IMP-321 [P-13-000321], CA-IMP-4389 [P-13-004389], CA-IMP-4391/H [P-13-004391], CA-IMP-8969 [P-13-010066], CA-IMP-8971 [P-13-010068], CA-IMP-10171 [P-13-011165], CA-IMP-10539 [P-13-011627], CA-IMP-10545 [P-13-011633], CA-IMP-10547 [P-13-011635], P-13-011740, P-13-011741, CA-IMP-10614 [P-13-011793], and CA-IMP-10615 [P-13-011794]) following prior, discrete recording events in an effort to better portray the true extents and distribution of cultural materials within the Project APE. No cultural constituents were recorded to the north of the San Diego and Arizona Eastern Railroad alignment that would suggest these sites are part of a larger CA-IMP-269 complex. In agreement with the BLM archaeologist, it was determined that the 2009 URS site boundary for CA-IMP-269 should be treated as the correct one.

CA-IMP-269 was revisited by Pacific Legacy archaeologists on July 3, 2018. Particular attention was paid to the previously recorded resource locations within the CA-IMP-269 boundary (*see* above), and the along the dirt access road to the north side of the San Diego and Arizona Eastern Railroad alignment (*see* Attachment B, Figure 2). Several prehistoric isolated finds were noted within the access road right-of-way during the July 2018 survey. These included a chalcedony flake, a tizon brownware sherd, a green porphyry flake, and an unworked granitic handstone that was abraded on one side. These finds were found spread out along a 590-meter segment of the access road right-of-way as it crosses the ASM boundary of CA-IMP-269 and the Project APE. Each was noted in an area that had been previously disturbed by road grading or railroad construction, so it is unlikely that the materials were found in situ. In consultation with the BLM archaeologist, it was determined that the preferred route for the proposed alternative waterline between Plaster City and the Westside Main Canal as it passes through the SCIC boundary of CA-IMP-269 would be along the access road on the north side of the San Diego and Arizona Eastern Railroad. The access road right-of-way has been previously disturbed through the installation of an underground fiber optic line, and further disturbance within the same area is not expected to impact CA-IMP-269 or the 13 resources noted above. An updated site record for CA-IMP-269 is provided in Attachment A.

Pacific Legacy has revised the site records for the resources above to reflect new finds or site boundaries. These updated records are presented in Attachment A. The proposed waterline routes that would avoid CA-IMP-2355, CA-IMP-4391/H, and CA-IMP-269 are depicted in Attachment B, Figures 1 and 2. Pacific Legacy will also provide the BLM with GIS shapefiles of the proposed routes. Should you have further questions, do not hesitate to contact me at 510-524-3991, ex. 1.

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Attachments:
Attachment A: Site Records
Attachment B: Figures

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Attachment A: Site Records (Confidential)

Attachment B: Figures (Confidential)

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APPENDIX F:
PALEONTOLOGICAL TECHNICAL STUDY

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PALEONTOLOGICAL TECHNICAL STUDY

UNITED STATES GYPSUM COMPANY EXPANSION/MODERNIZATION PROJECT

Bureau of Land Management

Prepared for:

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PSI Report: CA18ImperialPAC01R

May 15, 2018

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APPENDICES

1.0 EXECUTIVE SUMMARY

This report presents the results of the paleontological technical study conducted by Paleo Solutions, Inc. (Paleo Solutions) in support of the United States Gypsum Company (USG) Expansion/Modernization Project (Project) in Plaster City, Imperial County, California. At the request of USG, Lilburn Corporation (Lilburn) has been contracted to prepare the environmental documentation and permitting requirements necessary to obtain the regulatory agency permits for the continued development of the Plaster City Quarry per the approved Mine Reclamation Plan. USG plans to continue quarry development, including removal of gypsum from deposits within an ephemeral desert wash tributary to Fish Creek, installation of a water supply line from the proposed off-site Quarry Well No. 3 to the quarry, and construction of a berm to retain floodwaters from entering the quarry during and after mining. Additionally, the Project involves the replacement of an existing water supply pipeline from the Ocotillo area to the Plaster City Plant. An additional route for the installation of a new water supply pipeline from the Plaster City Plant to the Dixieland area was also included as an alternative in the National Environmental Policy Act (NEPA) analysis The total Project area consists of three main components: the Plaster City Quarry (Quarry) and Well No. 3 water supply line located immediately northwest of the Fish Creek Mountains; an existing water supply pipeline (Pipeline) that runs nearly parallel to the Evan Hawes Highway, located immediately north of Interstate 8 (I-8), extending from the Plaster City Plant and the Ocotillo area to the west; and an alternative water pipeline between the Plaster City Plant and the Dixieland area to the east. The Quarry is situated on lands administered by the Bureau of Land Management (BLM) El Centro Field Office and the State of California Department of Parks and Recreation, and on lands classified as undetermined. The Pipeline is situated on lands administered by the BLM El Centro Field Office and on lands classified as undetermined only. The BLM is the lead agency under the NEPA, and Imperial County is the lead agency under the California Environmental Quality Act (CEQA).

The paleontological potential of the Project area was evaluated based on an analysis of existing paleontological data. The three components of the analysis of existing data included a geologic map review, a literature search, and a museum records search at the San Diego Natural History Museum (SDNHM). Geologic mapping by Dibblee and Minch (2008a-c) and Todd et al. (2004) indicates that the Project area and its half-mile buffer zone are underlain by Mesozoic-age (or older) undivided intrusive igneous rocks (gr); Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Fish Creek Gypsum (Tfc); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); Holocene-age Lake Cahuilla beds (Qlc); Holocene-age alluvial terrace deposits (Qt); and Holocene-age alluvium, undivided (Qa).

According to the record searches, there are no previously recorded fossil localities within the Project area. However, the San Diego Natural History Museum (SDNHM) reported one fossil plant locality within one mile of the Pipeline from the Palm Spring Group (McComas, 2018). Moreover, literature and database reviews identified numerous vertebrate, invertebrate, and plant fossils recovered from Miocene- to Pleistocene-age deposits elsewhere in Imperial County.

The Potential Fossil Yield Classification (PFYC) system was applied to the results of the analysis of existing data (BLM, 2008; 2016). Based on the geologic map, literature review, and results of a museum records search, the Imperial Group (undivided), the Imperial Group Latrania Formation, and the Palm Spring Group have a high potential for paleontological resources (PFYC 4). Additionally, the Red Rock Formation of the Split Mountain Group and the Lake Cahuilla beds have a moderate paleontological potential (PFYC 3). Although the Red Rock Formation has a moderate paleontological potential, the Elephant Trees Formation of the Split Mountain Group has an unknown paleontological potential (PFYC U). Quaternary alluvial terrace deposits and Quaternary alluvium (undivided) are generally considered too young to contain scientifically significant paleontological resources; however, these sediments may overlie older geologic units with higher paleontological potential, which may be impacted at shallow depth. Thus, Quaternary alluvial terrace deposits and Quaternary alluvium (undivided) have a low paleontological potential (PFYC 2). Fish Creek Gypsum deposits of the Elephant Tree Formation are also classified as low paleontological potential (PFYC 2) because only microfossils have been recorded from thin marine claystones interbedded within the gypsum deposits, suggesting large macrofossil preservation is unlikely. Lastly, undivided intrusive igneous rocks have a very low paleontological potential (PFYC 1) because they form from the cooling of molten rock; therefore, they have no potential for fossil preservation.

Excavations in the Project area that impact Miocene-age Split Mountain Group, Red Rock Formation and Elephant Trees Formation; Pliocene- to Miocene-age Imperial Group, Latrania Formation and undivided; Pleistocene- to Pliocene-age Palm Spring Group, undivided; and Holocene-age Lake Cahuilla beds may well result in an adverse direct impact on scientifically important paleontological resources. Excavations entirely within previously disturbed sediments, artificial fill, Fish Creek Gypsum, alluvium (undivided), or alluvial terrace deposits are unlikely to uncover significant fossil vertebrate remains; furthermore, any recovered resources from previously disturbed sediments or artificial fill will lack stratigraphic context. However, younger deposits may shallowly overlie older *in situ* sedimentary deposits. Therefore, grading and other earthmoving activities may potentially result in significant adverse direct impacts to paleontological resources throughout portions of the Project area, with exceptions for areas underlain by Mesozoic-age undivided intrusive igneous rocks, which have a very low paleontological potential.

Due to the presence of moderate to high paleontological potential within the Project area, mitigation of potential adverse effects resulting from construction-related ground disturbance is recommended. A pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the Project area. All appropriate permits and permissions would need to be acquired prior to surveying. Only areas mapped as moderate, high, and unknown potential (PFYC 3, 4, and U) geologic units should be intensively surveyed. Areas mapped as very low and low potential (PFYC 1 and 2) geologic units should be confirmed as mapped. Following the survey, a paleontological resource monitoring and mitigation program (PRMMP) should be prepared by a BLM-permitted paleontologist and approved by the BLM and Imperial County. The PRMMP should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. A curation agreement with a BLM-approved fossil repository must also be obtained. Any subsurface bones or potential fossils that are unearthed during construction should be evaluated by a Qualified Paleontologist.

2.0 INTRODUCTION

This report presents the results of the paleontological technical study conducted by Paleo Solutions in support of the USG Expansion/Modernization Project (Project) in Plaster City, Imperial County, California. At the request of USG, Lilburn has been contracted to prepare the environmental documentation and permitting requirements necessary to obtain the regulatory agency permits for the continued development of the Plaster City Quarry per the approved Mine Reclamation Plan. This paleontological technical study was required by the BLM as the lead agency under NEPA and by Imperial County as the lead agency under CEQA, and it was completed in compliance with NEPA, BLM policies and procedures, CEQA, and best practices in mitigation paleontology (Murphey et al., 2014).

2.1 PROJECT LOCATION

The total Project area consists of three main components: the Plaster City Quarry (Quarry) and Well No. 3 water supply line located immediately northwest of the Fish Creek Mountains; an existing water supply pipeline (Pipeline) that runs nearly parallel to the Evan Hawes Highway, located immediately north of Interstate 8 (I-8), extending from the Plaster City Plant and the Ocotillo area to the west; and an alternative water pipeline between the Plaster City Plant and the Dixieland area to the east (Figure 1). The Quarry is situated on lands administered by the BLM El Centro Field Office and the State of California Department of Parks and Recreation, and on lands classified as undetermined. The Pipeline is situated on lands administered by the BLM El Centro Field Office and on lands classified as undetermined only.

Lands administered by the BLM within the bounds of the Quarry are situated in Sections 16 through 17, 19 through 20, 28 through 30, and 32 through 34 of Township 13 South, Range 9 East; and Sections 3 through 4 of Township 14 South, Range 9 East, encompassing approximately 187 acres of the Quarry. BLM-administered land within the Pipeline corridor consist of Sections 12 through 15 and 21 through 22 of Township 16 South, Range 10 East; and Sections 7 through 11 of Township 16 South, Range 11 East, encompassing approximately 316 acres of the Pipeline. Total BLM-administered land intersecting the combined Project area is approximately 503 acres (Table 1).

Lands administered by the State of California Department of Parks and Recreation within the bounds of the Quarry are situated in Section 24 Township 13 South, Range 8 East; and Sections 17 through 19 of Township 13 South, Range 9 East, encompassing approximately 18 acres of the Quarry. The Pipeline corridor does not transect or insect State-administered lands (Table 1).

The remainder of the Project area is situated within privately owned/undetermined property of the Quarry and Pipeline areas. Privately owned/undetermined property of the Quarry is situated on Sections 15 through16, 19 through 22, 28 through 30, and 32 through 33 of Township 13 South, Range 9 East, encompassing approximately 1,205 acres of the Quarry. Privately owned/undetermined property of the Pipeline is situated on Section 36 of Township 16 South, Range 9 East; Sections 21 and 28 through 31 of Township 16 South, Range 10 East; Sections 8 through 9 and 11 through 12 of Township 16 South, Range 11 East; and Section 7 of Township 16 South, Range 12 East. Total Project area classified as privately owned/undetermined property consists of approximately 258 acres (Table 1).

Geologic mapping by Dibblee and Minch (2008a-c) and Todd et al. (2004) indicates that the Project area and its half-mile buffer zone are underlain by Mesozoic-age (or older) undivided intrusive igneous rocks (gr); Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Fish Creek Gypsum (Tfc); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); Holocene-age Lake Cahuilla beds (Qlc); Holocene-age alluvial terrace deposits (Qt); and Holocene-age alluvium, undivided (Qa). See Appendix A for the distribution of the geologic units throughout the Project area.

2.2 PROJECT DESCRIPTION

USG plans to continue quarry development, including removal of gypsum from deposits within an ephemeral desert wash tributary to Fish Creek, installation of a water supply line from the proposed off-site Quarry Well No. 3 to the quarry, and construction of a berm to retain floodwaters from entering the quarry during and after mining. Additionally, the Project involves the replacement of an existing water supply pipeline from the Ocotillo area to the Plaster City Plant. An additional route for the installation of a new water supply pipeline from the Plaster City Plant to the Dixieland area was also included as an alternative in the NEPA analysis. After consultation with the BLM, ACOE, and USFWS, it was determined that a SEIS was necessary to address issues of potential environmental concern and supplement the previously approved Final EIR/EIS.

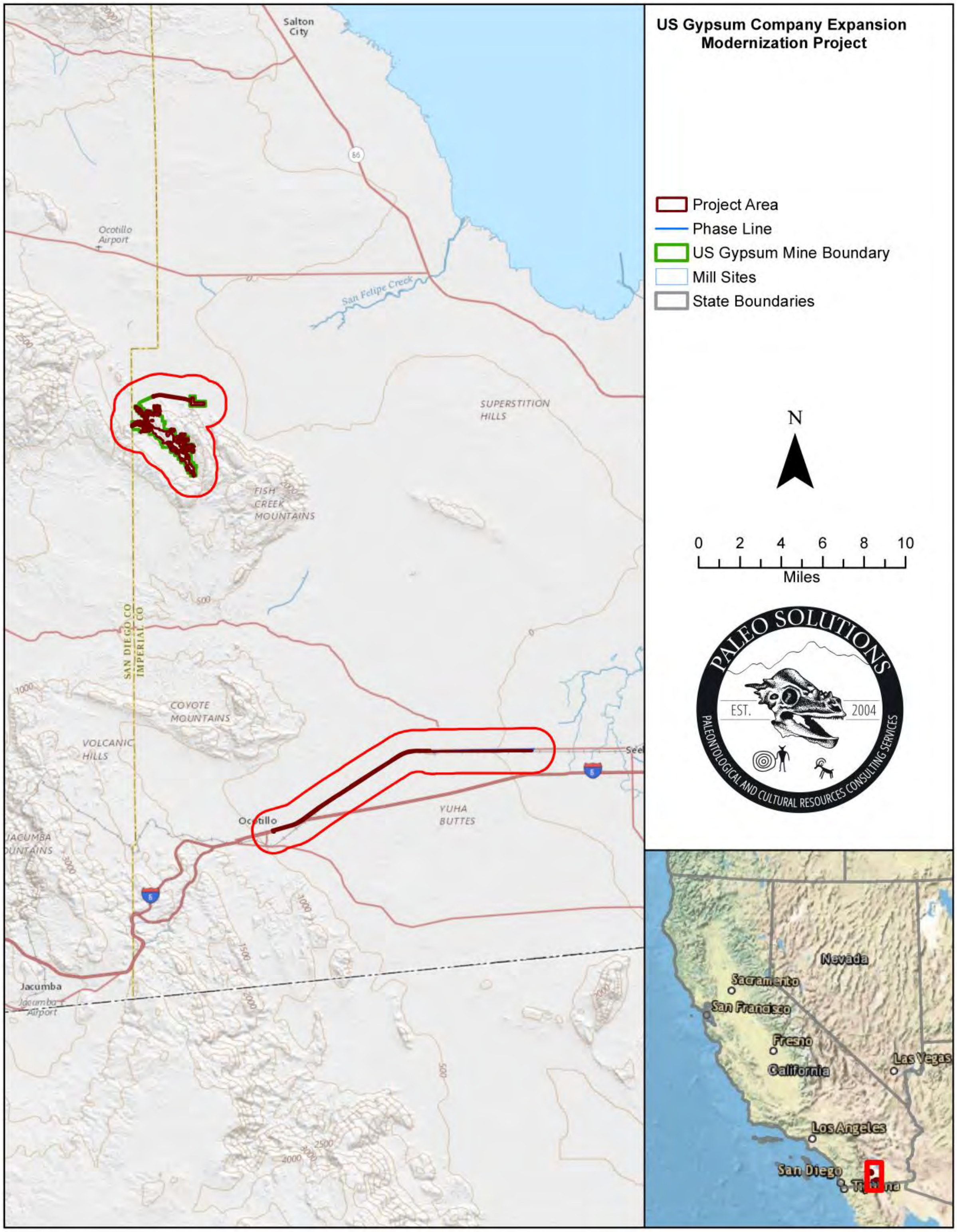

Figure 1. Project location map.

Table 1. United States Gypsum Company Expansion/Modernization Project Summary

<table>
<tr><td>Project Name</td><td colspan="5">USG Expansion/Modernization Project</td></tr>
<tr><td>Project Description</td><td colspan="5">USG plans to continue quarry development, including removal of gypsum from deposits within an ephemeral desert wash tributary to Fish Creek, installation of a water supply line from the proposed off-site Quarry Well No. 3 to the quarry, and construction of a berm to retain floodwaters from entering the quarry during and after mining. Additionally, the Project involves the replacement of an existing water supply pipeline from the Ocotillo area to the Plaster City Plant. An additional route for the installation of a new water supply pipeline from the Plaster City Plant to the Dixieland area was also included as an alternative in the NEPA analysis. After consultation with the BLM, ACOE, and USFWS, it was determined that a SEIS was necessary to address issues of potential environmental concern and supplement the previously approved Final EIR/EIS.</td></tr>
<tr><td>Project Area</td><td colspan="5">The total Project area consists of three main components: the Plaster City Quarry (Quarry) and Well No. 3 water supply line located immediately northwest of the Fish Creek Mountains; an existing water supply pipeline (Pipeline) that runs nearly parallel to the Evan Hawes Highway, located immediately north of Interstate 8 (I-8), extending from the Plaster City Plant and the Ocotillo area to the west; and an alternative water pipeline between the Plaster City Plant and the Dixieland area to the east.</td></tr>
<tr><td>Total Acreage</td><td colspan="5">1,981.03</td></tr>
<tr><td rowspan="14">Location (PLSS) and Land Owner/ Managing Agency</td><td>Quarter-Quarter</td><td>Section</td><td>Township</td><td>Range</td><td>Surface Management</td></tr>
<tr><td>T 49</td><td>15</td><td>T13S</td><td>R9E</td><td>Undetermined</td></tr>
<tr><td>T 46, T 49</td><td>16</td><td>T13S</td><td>R9E</td><td>BLM, Undetermined</td></tr>
<tr><td>L 2, L 3, L 4, L 6, NESW, NWSW, SWSW, T 46</td><td>17</td><td>T13S</td><td>R9E</td><td>BLM, State of California Department of Parks and Recreation</td></tr>
<tr><td>L 13, NESE, NESW, NWSE, SESW, SWSE</td><td>18</td><td>T13S</td><td>R9E</td><td>State of California Department of Parks and Recreation</td></tr>
<tr><td>L 6, L 7, L 8, L 10, L 17, L 18, L 19, L 20, L 21, L 25, L 26, L 17, L 28, M 6806, NENE, NENW, NESW, NWNE, SENW, T 67, T 68, T 69</td><td>19</td><td>T13S</td><td>T9E</td><td>BLM, State of California Department of Parks and Recreation, Undetermined</td></tr>
<tr><td>NWNW, SWNW, T 69</td><td>20</td><td>T13S</td><td>R9E</td><td>BLM, Undetermined</td></tr>
<tr><td>T 49</td><td>21</td><td>T13S</td><td>R9E</td><td>Undetermined</td></tr>
<tr><td>T 49</td><td>22</td><td>T13S</td><td>R9E</td><td>Undetermined</td></tr>
<tr><td>NESW, NWSE, NWSW, SENW, SESE, SESW, SWNE, SWNW, SWSE, SWSW</td><td>28</td><td>T13S</td><td>R9E</td><td>BLM, Undetermined</td></tr>
<tr><td>L 1, L 4, L 5, L 7, L 8, L 9, NWSW, SESE, SESW, SWSE, T 69, T 70, T 71, T 72</td><td>29</td><td>T13S</td><td>R9E</td><td>BLM, Undetermined</td></tr>
<tr><td>L 5, L 7, L 8, L 25, L 26, L 28, L 29, SWNE, T 67, T 69</td><td>30</td><td>T13S</td><td>R9E</td><td>BLM, Undetermined</td></tr>
<tr><td>L 1, L 2, NENW, NWNE, T 78</td><td>32</td><td>T13S</td><td>R9E</td><td>BLM,</td></tr>
</table>

					Undetermined
	L 1, L 2, L 3, L 4, L 7, L 9, L 11, L 12, L 13, NENE, NESE, NESW, NWNE, NWSE, NWSW, SENE, SWNE, T 78	33	T13S	R9E	BLM, Undetermined
	L 1	34	T13S	R9E	BLM
	L 4, SWNW	3	T14S	R9E	BLM
	L 1, L 5, L 7, L 8, SENE, SWNE	4	T14S	R9E	BLM
	L 1, L 2, T 39, T 72	36	T16S	R9E	Undetermined
	NESE, SESE, SESW, SWSE	12	T16S	R10E	BLM
	NENW, NWNE, NWNW, SWNW	13	T16S	R10E	BLM
	NESW, NWSE, SENE, SESW, SWNE, SWSW	14	T16S	R10E	BLM
	SESE	15	T16S	R10E	BLM
	L 16, T 38, T 39, T 41	21	T16S	R10E	BLM, Undetermined
	L 1, L 3, L 4, NENE, NWNE, SENW, SWNE, T 39	22	T16S	R10E	BLM
	L 3, T 41	28	T16S	R10E	Undetermined
	L 1, L 11, L 12, T 44, T 46, T 49	29	T16S	R10E	Undetermined
	T 49	30	T16S	R10E	Undetermined
	L 5, L 6, T 49, T 63	31	T16S	R10E	Undetermined
	L 5, NESE, NESW, NWSE	7	T16S	R11E	BLM
	NESE, NESW, NWSE, NWSW, SENE, SENW, SWNE	8	T16S	R11E	BLM, Undetermined
	NESE, NESW, NWSE, NWSW, SENE, SENW, SWNE, SWNW	9	T16S	R11E	BLM, Undetermined
	NESE, NESW, NWSE, NWSW, SENE, SENW, SWNE, SWNW	10	T16S	R11E	BLM
	NESE, NESW, NWSE, NWSW, SENE, SENW, SWNE, SWNW	11	T16S	R11E	BLM, Undetermined
	NESE, NESW, NWSE, NWSW, SENE, SENW, SWNE, SWNW	12	T16S	R11E	BLM, Undetermined
	L 2, L 3, NESW, SENW	7	T16S	R12E	Undetermined
Land Owner	**Surface Management Agency**	**Acres**			
	Federal (BLM)	502.25			
	State of California Department of Parks and Recreation	17.87			
	Privately Owned/Undetermined	1,460.91			
Topographic Map(s)	USGS Borrego Mountain SE (1959), Carrizo Mountain NE (1960), Plaster City (1976), Painted Gorge (1976), and Coyote Wells (1976), California 7.5' Topographic Quadrangles				
Geologic Map(s)	• Dibblee, T.W., and Minch, J.A., 2008a, Geologic map of the Borrego & Borrego Mountain 15 minute quadrangles, San Diego and Imperial Counties, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-409, scale 1:62,500. • Dibblee, T.W., and Minch, J.A., 2008b, Geologic map of the Coyote Wells & Heber 15 minute quadrangles, Imperial County, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-405, scale 1:62,500. • Dibblee, T.W., and Minch, J.A., 2008c, Geologic map of the Plaster City & Brawley 15 minute quadrangles, Imperial County, California: Dibblee Geological Foundation, Dibblee				

<table>
<tr><td></td><td colspan="4">Foundation Map DF-406, scale 1:62,500.
• Todd, V.R., Alvarez, R.M., and Techni Graphic Systems, Inc., 2004, Preliminary geologic map of the El Cajon 30' X 60' quadrangle, southern California: U.S. Geological Survey, Open-File Report OF-2004-1361, scale 1:100,000.</td></tr>
<tr><td rowspan="11">Mapped Geologic Unit(s) and age(s)</td><td>Geologic Unit</td><td>Map Symbol</td><td>Age</td><td>Paleontological Potential (PFYC)</td></tr>
<tr><td>Quaternary alluvium, undivided</td><td>Qa</td><td>Holocene</td><td>2 (Low)</td></tr>
<tr><td>Quaternary alluvial terrace deposits</td><td>Qt</td><td>Holocene</td><td>2 (Low)</td></tr>
<tr><td>Lake Cahuilla beds</td><td>Qlc</td><td>Holocene</td><td>3 (Moderate)</td></tr>
<tr><td>Palm Spring Group, undivided</td><td>QTp</td><td>Pleistocene – Pliocene</td><td>4 (High)</td></tr>
<tr><td>Imperial Group, Latrania Formation</td><td>Til</td><td>Pliocene – Miocene</td><td>4 (High)</td></tr>
<tr><td>Imperial Group, undivided</td><td>Ti</td><td>Pliocene – Miocene</td><td>4 (High)</td></tr>
<tr><td>Fish Creek Gypsum</td><td>Tfc</td><td>Pliocene – Miocene</td><td>2 (Low)</td></tr>
<tr><td>Split Mountain Group, Elephant Trees Formation</td><td>Tse</td><td>Miocene</td><td>U (Unknown)</td></tr>
<tr><td>Split Mountain Group, Red Rock Formation</td><td>Tsr</td><td>Miocene</td><td>3 (Moderate)</td></tr>
<tr><td>Undivided intrusive igneous rocks</td><td>gr</td><td>Mesozoic or older</td><td>1 (Very Low)</td></tr>
<tr><td>Previously Documented Fossil Localities within the Project area</td><td colspan="4">No fossil localities have been previously recorded from the Project area; however, SDNHM contains records of 1 fossil locality from the Palm Spring Group within 1-mile of the Pipeline.</td></tr>
<tr><td>Recommendation(s)</td><td colspan="4">Due to the presence of moderate to high paleontological potential within the Project area, mitigation of potential adverse effects resulting from construction-related ground disturbance is recommended. A pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the Project area. All appropriate permits and permissions would need to be acquired prior to surveying. Only areas mapped as moderate, high, and unknown potential (PFYC 3, 4, and U) geologic units should be intensively surveyed. Areas mapped as very low and low potential (PFYC 1 and 2) geologic units should be confirmed as mapped. Following the survey, a PRMMP should be prepared by a BLM-permitted paleontologist and approved by the BLM and Imperial County. The PRMMP should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. A curation agreement with a BLM-approved fossil repository must also be obtained. Any subsurface bones or potential fossils that are unearthed during construction should be evaluated by a Qualified Paleontologist.</td></tr>
</table>

3.0 DEFINITION AND SIGNIFICANCE OF PALEONTOLOGICAL RESOURCES

As defined by Murphey and Daitch (2007): "Paleontology is a multidisciplinary science that combines elements of geology, biology, chemistry, and physics in an effort to understand the history of life on earth. Paleontological resources, or fossils, are the remains, imprints, or traces of once-living organisms preserved in rocks and sediments. These include mineralized, partially mineralized, or unmineralized bones and teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains. Paleontological resources include not only fossils themselves, but also the associated rocks or organic matter and the physical characteristics of the fossils' associated sedimentary matrix.

The fossil record is the only evidence that life on earth has existed for more than 3.6 billion years. Fossils are considered non-renewable resources because the organisms they represent no longer exist. Thus, once destroyed, a fossil can never be replaced. Fossils are important scientific and educational resources because they are used to:

- Study the phylogenetic relationships amongst extinct organisms, as well as their relationships to modern groups;
- Elucidate the taphonomic, behavioral, temporal, and diagenetic pathways responsible for fossil preservation, including the biases inherent in the fossil record;
- Reconstruct ancient environments, climate change, and paleoecological relationships;
- Provide a measure of relative geologic dating that forms the basis for biochronology and biostratigraphy, and which is an independent and corroborating line of evidence for isotopic dating;
- Study the geographic distribution of organisms and tectonic movements of land masses and ocean basins through time;
- Study patterns and processes of evolution, extinction, and speciation; and
- Identify past and potential future human-caused effects to global environments and climates."

Fossil resources vary widely in their relative abundance and distribution and not all are regarded as significant. According to BLM Instructional Memorandum (IM) 2009-011, a "Significant Paleontological Resource" is defined as:

> "Any paleontological resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant paleontological resource is considered to be of scientific interest if it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has an identified educational or recreational value. Paleontological resources that may be considered not to have scientific significance include those that lack provenience or context, lack physical integrity due to decay or natural erosion, or that are overly redundant or are otherwise not useful for research. Vertebrate fossil remains and traces include bone, scales, scutes, skin impressions, burrows, tracks, tail drag marks, vertebrate

> coprolites (feces), gastroliths (stomach stones), or other physical evidence of past vertebrate life or activities" (BLM, 2008).

Vertebrate fossils, whether preserved remains or track ways, are classified as significant by most state and federal agencies and professional groups (and are specifically protected under the California Public Resources Code). In some cases, fossils of plants or invertebrate animals are also considered significant and can provide important information about ancient local environments.

The full significance of fossil specimens or fossil assemblages cannot be accurately predicted before they are collected, and in many cases, before they are prepared in the laboratory and compared with previously collected fossils. Pre-construction assessment of significance associated with an area or formation must be made based on previous finds, characteristics of the sediments, and other methods that can be used to determine paleoenvironmental and taphonomic conditions.

4.0 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

This section of the report presents the regulatory requirements pertaining to paleontological resources that apply to this Project.

4.1 FEDERAL REGULATORY SETTING

If any federal funding is used to wholly or partially finance a project, it is sited on federal lands, involves a federal permit, and/or includes a perceived federal impact, federal laws and standards apply, and an evaluation of potential impacts on paleontological resources may be appropriate and/or required. The management and preservation of paleontological resources on public and federal lands are prescribed under various laws, regulations, and guidelines.

4.1.1 National Environmental Policy Act (16 USC Section 431 et seq.)

The National Environmental Policy Act of 1969, [NEPA] as amended (Public Law [Pub. L.] 91-190, 42 United States Code [USC] 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258 § 4(b), Sept. 13, 1982) recognizes the continuing responsibility of the Federal Government to "preserve important historic, cultural, and natural aspects of our national heritage . . ." (Sec. 101 [42 USC § 4321]) #382). With the passage of the Paleontological Resources Preservation Act (PRPA) (2009), paleontological resources are considered to be a significant resource and it is therefore now standard practice to include paleontological resources in NEPA studies in all instances where there is a possible impact.

4.1.2 Antiquities Act of 1906

The Antiquities Act of 1906 (16 USC 431-433) states, in part:

> That any person who shall appropriate, excavate, injure or destroy any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the Government of the United States, without the permission of the Secretary of the Department of the Government having jurisdiction over the lands on which said antiquities are situated, shall upon conviction, be fined in a sum of not more than five hundred dollars or be imprisoned for a period of not more than ninety days, or shall suffer both fine and imprisonment, in the discretion of the court.

Although there is no specific mention of natural or paleontological resources in the Act itself, or in the Act's uniform rules and regulations (Title 43 Part 3, Code of Federal Regulations [43 CFR 3]), the term "objects of antiquity" has been interpreted to include fossils by the National Park Service (NPS), the BLM, the Forest Service (FS), and other federal agencies. Permits to collect fossils on lands administered by federal agencies are authorized under this Act. However, due to the large gray areas left open to interpretation due to the imprecision of the wording, agencies are hesitant to interpret this act as governing paleontological resources.

4.1.3 Federal Land Management and Policy Act (FLMPA) (43 USC 1701)

Federal law including the Federal Land Management and Policy Act (FLMPA) of 1976 (43 USC 1701) includes objectives such as the evaluation, management, protection and location of fossils on BLM-managed lands, defines fossils, and lays out penalties for the destruction of significant fossils. Also, NEPA requires the preservation of “historic, cultural, and natural aspects of our national heritage.” Most recently, the Omnibus Public Lands Act refines NEPA and FLMPA guidelines and strictures, as well as outlines minimum punishments for removal or destruction of fossils from Federal/public lands (see below).

4.1.4 Paleontological Resources Preservation Act (PRPA)

Paleontological Resources Preservation, Title VI, Subtitle D in the Omnibus Public Lands Act of 2009, Public Law 111-011 Purpose: The Secretary (Interior and Agriculture) shall manage and protect paleontological resources on Federal land using scientific principles and expertise. With the passage of the PRPA, Congress officially recognizes the importance of paleontological resources on federal lands (U.S. Department of the Interior, US Department of Agriculture) by declaring that fossils from federal lands are federal property that must be preserved and protected using scientific principles and expertise. The PRPA provides:

- Uniform definitions for “paleontological resources” and “casual collecting”;
- Uniform minimum requirements for paleontological resource use permit issuance (terms, conditions, and qualifications of applicants);
- Uniform criminal and civil penalties for illegal sale and transport, and theft and vandalism of fossils from Federal lands; and
- Uniform requirements for curation of federal fossils in approved repositories.

4.2 STATE REGULATORY SETTING

4.2.1 California Environmental Quality Act (CEQA)

The procedures, types of activities, persons, and public agencies required to comply with CEQA are defined in the Guidelines for Implementation of CEQA (State CEQA Guidelines), as amended on March 18, 2010 (Title 14, Section 15000 et seq. of the California Code of Regulations) and further amended January 4th, 2013. One of the questions listed in the CEQA Environmental Checklist is: “Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?” (State CEQA Guidelines Section 15064.5 and Appendix G, Section V, Part C).

4.2.2 State of California Public Resources Code

The State of California Public Resources Code (Chapter 1.7), Sections 5097 and 30244, includes additional state level requirements for the assessment and management of paleontological resources.

These statutes require reasonable mitigation of adverse impacts to paleontological resources resulting from development on state lands, and define the excavation, destruction, or removal of paleontological "sites" or "features" from public lands without the express permission of the jurisdictional agency as a misdemeanor. As used in Section 5097, "state lands" refers to lands owned by, or under the jurisdiction of, the state or any state agency. "Public lands" is defined as lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

4.3 LOCAL REGULATORY SETTING

4.3.1 Imperial County

Imperial County's General Plan (1993) has no mention of paleontological resources, nor a cultural resources entry that might apply to paleontological resources.

5.0 METHODS

This paleontological analysis of existing data included a geologic map review, a literature search, and museum records search of the Project area. The goal of this report is to evaluate the paleontological potential of the Project area and make recommendations for the mitigation of adverse impacts on paleontological resources that may occur as a result of the proposed Project. Mathew Carson, M.S., performed the background research and authored this report, which was reviewed by Paleontological Principal Investigator Courtney Richards, M.S. Geraldine Aron, M.S., oversaw all aspects of the Project as the Program Director. GIS maps were prepared by Nathan Dickey, M.S.

Paleo Solutions will retain an archival copy of all Project information including field notes, maps, and other data.

5.1 ANALYSIS OF EXISTING DATA

Paleo Solutions reviewed geologic mapping of the Project area by Dibblee and Minch (2008a-c) and Todd et al. (2004). The literature reviewed included published and unpublished scientific papers, including a review of paleontological resources within the BLM El Centro Field Office administrative area conducted by Donohue and Deméré (2015), conducted on behalf for the BLM El Centro Field Office, and records of fossil localities maintained in the Paleobiology Database (PBDB, 2018). Paleontological museum records search results from the SDNHM (McComas, 2018) were analyzed and incorporated into this paleontological investigation.

5.2 CRITERIA FOR EVALUATING PALEONTOLOGICAL POTENTIAL

The PFYC system was developed by the BLM (BLM, 2016). Because of its demonstrated usefulness as a resource management tool, the PFYC has been utilized for many years for projects across the country, regardless of land ownership. It is a predictive resource management tool that classifies geologic units on their likelihood to contain paleontological resources on a scale of 1 (very low potential) to 5 (very high potential). This system is intended to aid in predicting, assessing, and mitigating paleontological resources. The PFYC ranking system is summarized in Table 2.

Table 2. Potential Fossil Yield Classification (BLM, 2016)

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary (PFYC System)
1 = Very Low	Geologic units are not likely to contain recognizable paleontological resources.

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary (PFYC System)
Potential	Units are igneous or metamorphic, excluding air-fall and reworked volcanic ash units.
	Units are Precambrian in age.
	Management concern is usually negligible, and impact mitigation is unnecessary except in rare or isolated circumstances.
2 = Low	Geologic units are not likely to contain paleontological resources.
	Field surveys have verified that significant paleontological resources are not present or are very rare.
	Units are generally younger than 10,000 years before present.
	Recent eolian deposits
	Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely
	Management concern is generally low, and impact mitigation is usually unnecessary except in occasional or isolated circumstances.
3 = Moderate Potential	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence.
	Marine in origin with sporadic known occurrences of paleontological resources.
	Paleontological resources may occur intermittently, but these occurrences are widely scattered
	The potential for authorized land use to impact a significant paleontological resource is known to be low-to-moderate.
	Management concerns are moderate. Management options could include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Opportunities may exist for hobby collecting. Surface-disturbing activities may require sufficient assessment to determine whether significant paleontological resources occur in the area of a proposed action and whether the action could affect the paleontological resources.
4 = High Potential	Geologic units that are known to contain a high occurrence of paleontological resources.
	Significant paleontological resources have been documented but may vary in occurrence and predictability.
	Surface-disturbing activities may adversely affect paleontological resources.
	Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present.
	Illegal collecting activities may impact some areas.
	Management concern is moderate to high depending on the proposed action. A field survey by a qualified paleontologist is often needed to assess local conditions. On-site monitoring or spot-checking may be necessary during land disturbing activities. Avoidance of known paleontological resources may be necessary.
5 = Very High Potential	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources.
	Significant paleontological resources have been documented and occur consistently
	Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities.
	Unit is frequently the focus of illegal collecting activities.
	Management concern is high to very high. A field survey by a qualified paleontologist is almost always needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.
U = Unknown	Geologic units that cannot receive an informed PFYC assignment
	Geological units may exhibit features or preservational conditions that suggest significant paleontological resources could be present, but little information about

BLM PFYC Designation	Assignment Criteria Guidelines and Management Summary (PFYC System)
	the actual paleontological resources of the unit or area is unknown.
	Geologic units represented on a map are based on lithologic character or basis of origin, but have not been studied in detail.
	Scientific literature does not exist or does not reveal the nature of paleontological resources.
	Reports of paleontological resources are anecdotal or have not been verified.
	Area or geologic unit is poorly or under-studied.
	BLM staff has not yet been able to assess the nature of the geologic unit.
	Until a provisional assignment is made, geologic units with unknown potential have medium to high management concerns. Field surveys are normally necessary, especially prior to authorizing a ground-disturbing activity.

6.0 ANALYSIS OF EXISTING DATA

The Project area is situated within the Colorado Desert Geomorphic Province, bound on the east by the Colorado River, on the west by the Peninsular Ranges Geomorphic Province, and to the south by the Gulf of California in Mexico. Being an extension of the Gulf of California, the Colorado Desert Geomorphic Province is mostly below sea level and formed as a result regional subsidence related to crustal extension and transtension that produced a number of fault-bounded basins that were filled with sediments from the Miocene to the Pleistocene, most notably from heavy sediments loads deposited by the Colorado River, leading to the closure of the Gulf of California near the end of the Pliocene (Norris and Webb, 1990; Dorsey, 2005; California Geological Survey, 2015). The surface elevation ranges from 350 feet above sea level near the San Bernardino-Riverside county line to 235 feet below sea level at the lowest part of the Salton Basin (Norris and Webb, 1990); the portion of the Colorado Desert Geomorphic Province situated below sea level is approximately 90 miles by 25 miles and has been used extensively for agriculture.

Within the geomorphic province, the Salton Trough, a large structural depression extending from San Gorgonio Pass (near Palm Springs) to the delta of the Colorado River in the Gulf of California in Mexico, is the dominant feature within the province and includes the Salton Basin, an area that includes all the drainage areas to the Salton Sea as well as the Salton Sea itself.

Structurally, faults of the Colorado Desert Geomorphic Province trend northwest-southeast, with the San Andreas fault system being prominent in the Coachella Valley and along the northeast side of the Salton Sea. The Salton Basin is characterized as a complex rift resulting from the northwesterly movement of the Peninsular Ranges away from the North American continent, resulting in significant seismic activity within the province over the past 10 million years (Atwater, 1970; Lonsdale, 1989; Norris and Webb, 1990; Stock and Hodges, 1989; Powell et al., 1993; DeMets, 1995; Dickinson, 1996; Atwater and Stock, 1998; Axen and Fletcher, 1998; Dorsey, 2005). Additionally, structural folds are prominent in the Colorado Desert, ranging from small-scale to large-scale. Examples include the Indio and Mecca hills, which contain young anticlinal structures and small, tightly folded strata near faults, and the San Felipe and Superstition mountain chains, which show similar anticlinal structural features (Norris and Webb, 1990).

Along the western margin of the Colorado Desert Geomorphic Province, the Fish Creek Mountains reside on the west side of the Imperial Valley, south of San Felipe Creek, and consist of rugged northeast and east facing slopes, approximately 2,400 feet above the Salton Trough (Todd et al., 1987). The Quarry portion of the Project area is located within the northwest portion of the Fish Creek Mountains, and its basement rocks consist of gneisses, marbles, and granitic rocks, correlative to the Mesozoic-age crystalline rocks of the Peninsular Ranges to the west. During the Paleogene, the crystalline basement rocks of the Fish Creek Mountains area were exposed and eroded. By the Miocene, the paleoenvironment shifted from that of erosion to deposition of nonmarine sediments in an arid to semiarid environment (Norris and Webb, 1990). Throughout the western Salton Trough area, the Miocene-aged Red Rock Formation (classified as part of the Anza Formation by Todd et al., 2004) is the oldest known sedimentary geologic unit, which consisted of fanglomerate deposits of lenticular beds, large fresh clasts of granitic rock, and its coarse pebbly conglomerate and sandstone beds (Norris and Webb, 1990). Stratigraphically in the western Salton Trough near the Fish Creek Mountains, the Anza Formation is overlain by the Miocene-age Split Mountain Group, which consists of marine and nonmarine sediments and abundant gypsum deposits (described separately in the following sections), and the subsequent Miocene- to Pliocene-age Imperial Group, which consists of marine sediments. After the Colorado River delta closed the connection of the Salton Trough to the developing Gulf of California, the Pliocene- to Pleistocene-age Palm Spring Group, which consists of nonmarine sediments, was deposited near the center of the Salton Basin. During the Holocene when the Colorado River tributaries periodically changed their courses across the delta, a shallow freshwater lake, Lake Cahuilla, intermittently formed along the base of the Santa Rosa Mountains on the west side of the Salton Sea, which is noticeable by travertine coating on cliff faces throughout the area, with beach deposits, sand spits, and mouth bars along the base of the Santa Rosa Mountains (Norris and Webb, 1990). According to Norris and Webb (1990), unlike the ancient lakes in the Mojave Desert, which formed as a result of melting glaciers, Lake Cahuilla likely formed as a result of Colorado River flooding independent of glaciation, with the last filling occurring between approximately A.D. 900 and 1400.

6.1 LITERATURE SEARCH

Geologic mapping by Dibblee and Minch (2008a-c) and Todd et al. (2004) indicates that the Project area and its half-mile buffer zone are underlain by Mesozoic-age (or older) undivided intrusive igneous rocks (gr); Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Fish Creek Gypsum (Tfc); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); Holocene-age Lake Cahuilla beds (Qlc); Holocene-age alluvial terrace deposits (Qt); and Holocene-age alluvium, undivided (Qa). The geologic distributions of the geologic units in the Project area, as mapped by Dibblee and Minch (2008a-c) and Todd et al. (2004), are presented in Appendix A.

6.1.1 Intrusive Igneous Rocks (Undivided) (gr)

Igneous rocks are crystalline or non-crystalline rocks that form through the cooling and subsequent solidification of lava or magma. Intrusive (plutonic) igneous rocks form below the earth's surface, and extrusive (volcanic) rocks form on the earth's surface. Lava and magma are formed by the melting of pre-existing plutonic rocks in the earth's crust or mantle due to increases in temperature, changes in pressure, or changes in geochemical composition. Extreme temperatures in the environments in which intrusive igneous rocks form prevent the preservation of fossils. The formation of extrusive igneous rocks as a result of volcanic processes is associated with extremely high temperatures that also generally prevent the preservation of fossils. Therefore, Mesozoic-age intrusive igneous rocks (undivided) have a very low paleontological potential (PFYC 1).

6.1.2 Split Mountain Group – Red Rock Formation (Tsr)

The Miocene-age Red Rock Formation, referred to as the Anza Formation by Todd et al. (2004), consists of alluvial sandstones and conglomerates. Near Table Mountain, the Red Rock Formation is approximately 300 feet thick and consists of yellowish- to reddish-brown, weakly stratified, friable, medium- to coarse-grained sandstones and conglomeratic sandstones (Donohue and Deméré, 2015). However, in the vicinity of Split Mountain Gorge, the Red Rock Formation is considerably thicker, greater than 1,700 feet thick, and consists of reddish-brown arkosic sandstones and fanglomerates (Woodard, 1974; Donohue and Deméré, 2015). Overall, the Red Rock Formation varies in its lithology, ranging from greenish-gray, to orange or reddish-brown, to light gray in color, massive to thickly bedded, arkosic fine- to coarse-grained sandstones and sandy conglomerates (Woodard, 1963, 1974; Winker, 1987; Todd et al., 2004; Donohue and Deméré, 2015). Stratigraphically, basement rocks unconformably underlie the Red Rock Formation, and the Elephant Trees Formation unconformably overlies the Red Rock Formation.

The Red Rock Formation has yielded several scientifically significant fossil localities, particularly in the vicinity of Table Mountain and Ocotillo Canyon. Fossils recorded from the Red Rock Formation include bones and teeth of Miocene-age land mammals, such as rodents, rabbits, and camels from near Table Mountain, and a dentary with teeth and isolated postcrania of a small camelid, cf. *Protolabis* sp., from Ocotillo Canyon, approximately 16 feet from the contact of the Alverson Formation (Deméré and Borce, 2015; Donohue and Deméré, 2015). The PBDB (2018) does not contain paleontological resources from the Red Rock Formation. Based on the limited exposures of the Red Rock Formation, which have yielded fragmentary but scientifically significant vertebrate fossils, the Red Rock Formation has a moderate paleontological potential (PFYC 3).

6.1.3 Split Mountain Group – Elephant Trees Formation (Tse)

The Miocene-age Elephant Trees Formation, previously known as the Elephant Trees Member of the Split Mountain Formation, is a coarse-grained debris flow and sheet flood deposit, with pronounced lateral thickening (Winker, 1987; Winker and Kidwell, 1996; Dorsey, 2005). This geologic unit conformably to unconformably overlies the sandstone lithology of the Red Rock Formation, with the presence of normal faults, alluvial fan deposits, and braided stream deposits indicating sedimentation in an active rift basin during the late Miocene (Ker, 1982, 1984; Winker, 1987; Winker and Kidwell, 1996; Dorsey, 2005). According to Dibblee and Minch (2008a-c), the Elephant Trees Formation, which they call the Split Mountain Formation, consists of middle Miocene, nonmarine sedimentary rocks of granite and gneiss-breccia, gray to brown, massive to bedded, clast-supported boulder- to pebble-conglomerate and sandstone, with andesite agglomerate and basic andesite, as well as local minor oxidized beds. Todd et al. (2004) also designate the Elephant Trees Formation as the Split Mountain Formation, which they describe as having four members: 1) a lower member of dark gray, very coarse boulder and cobble fanglomerate composed of angular blocks of quartz diorite and metamorphic rocks; 2) the Fish Creek Gypsum, which is interbedded locally with sandstone and shale of the overlying marine arenite member (the Fish Creek Gypsum is described below); 3) intercalated, lensing quartz arenite and olive-green micaceous shale containing middle of late Miocene-age marine fossils; and 4) massive gray fanglomerate of megabreccia that is lithologically similar to the basal gray fanglomerate but containing schist clasts and larger quartz diorite blocks (Norris and Webb, 1990). According to McComas (2018), the exact age of the Elephant Trees Formation has not been constrained, but likely spans most of the Miocene (Todd et al., 2004; Dorsey, 2005; Dibblee and Minch, 2008a-c).

Previous investigators have not recorded fossil localities within the Elephant Trees Formation; however, according to Donohue and Deméré (2015) and McComas (2018), any fossils recovered from this formation would significantly improve geologic dating of this formation. Additionally, the PBDB (2018) does not contain fossil locality records from the Elephant Tree Formation. The Elephant Trees Formation has an unknown potential for paleontological resources (PFYC U).

6.1.4 Fish Creek Gypsum (Tfc)

The late Miocene-age Fish Creek Gypsum is a belt of pure gypsum in the northwestern Fish Creek Mountains, with thickness ranging from 100 to 200 feet (Norris and Webb, 1990; Todd et al., 2004; Dibblee and Minch, 2008a-c), and has been described as the second stratigraphic subunit of the Split Mountain Formation of Dibblee and Minch (2008a-c) (i.e., the Elephant Trees Formation). The geologic unit consists of gypsum and anhydrite, white, laminated to massive, and locally containing a 5-foot thick bed of celestite. According to Todd et al. (2004), the evaporite deposits rest unconformably on basement rocks or transitional marine mudstones, intertongued laterally with the fanglomerate deposits and overlain by locally derived turbidites of the Elephant Tree Formation (Kerr and Kidwell, 1991; Todd et al., 2004); however, Dorsey (2005) designates these turbidites as part of the overlying Imperial Group. The interpretation of the depositional environment of the Fish Creek Gypsum varies among marginal-marine evaporite setting, restricted shallow marine basin, or marine basin with precipitation of gypsum from hydrothermal vent systems (Winker, 1987; Dean, 1988, 1996; Jefferson and Peterson, 1998; Dorsey, 2005). Index microfossils recovered from interbedded marine claystones suggest that the Fish Creek Gypsum was deposited between 3.4 to 6.3 million years ago (Dean, 1996; Dorsey, 2005).

The PBDB (2018) does not contain fossil localities records from the Fish Creek Gypsum subunit of the Elephant Trees Formation. Because previous studies have only recorded microfossils from thin claystones interbedded within this unit, the Fish Creek Gypsum has a low potential for paleontological resources (PFYC 2).

6.1.5 Imperial Group – Latrania Formation (Til)

The Miocene- to Pliocene-age Latrania Formation, along with the Fish Creek Gypsum, record a rapid tectonically-controlled transgression of marine waters. According to Winker and Kidwell (1996), the Latrania Formation is a marine turbidite section located in the lower Imperial Group that marks the northern proto-Gulf of California termination of the Miocene marine transgression into the southernmost developing-subsident Salton Trough region. The Latrania Formation consists of carbonate sandstones discontinuously overlying turbidite sandstones of the Split Mountain Group (Donohue and Deméré, 2015). The Latrania Formation is rich in macroinvertebrates from coralgal sediments (Donohue and Deméré, 2015). According to previous researchers, the Latrania Formation has yielded marine and terrestrial vertebrates of Hemphillian North American Land Mammal Age (NALMA).

According to Deméré (2006) and Rugh (2013a, 2014b), the Latrania Formation contains locally diverse and abundant assemblages of marine invertebrate fossils, such as mollusks, echinoderms, and colonial corals, particularly in the Coyote Mountains and Fish Creek Mountains (Donohue and Deméré, 2015). Fossil localities yielding vertebrates are more rare within the Latrania Formation, but vertebrate fossils recorded include marine sharks, rays, bony fish, as well as dolphins, baleen whales, and sea cows (Deméré, 1993, 2006; Roeder, 2013; Donohue and Deméré, 2015). The PBDB (2018) contains 100+ marine invertebrate fossils from the Latrania Formation. Taxa include: corals; bivalves, including clams, oysters, scallops, and mussels; gastropods; and echinoids, including sand dollars and sea urchins. Thus, the fossiliferous shallow marine deposits of the Latrania Formation have a high potential for paleontological resources (PFYC 4).

6.1.6 Imperial Group - Undivided (Ti)

The Miocene- to Pliocene-age Imperial Group (undivided) consists of shallow, brackish marine clastic sedimentary rocks, with a total thickness of 3,600 feet. According to Dibblee and Minch (2008a-c) and Todd et al. (2004), the Imperial Group consists of claystone, light grayish-tan to yellow, conchoidally fractured, weathered to yellowish-gray clay soil, and contains interbedded sandstone, buff to gray in color, laminated, friable to hard, with hard, dark brown oyster reef fossil fauna. The Imperial Group has a gradational contact with the underlying Split Mountain Group. The Imperial Group has been subdivided in various ways by previous investigators but summarized by Dorsey (2005) as containing a thick, grading-upward succession of marine fossiliferous claystone, siltstone, sandstone, and minor limestones, which have been grouped by Winker (1987) and Todd et al. (2004) as representing two facies sequences: an older, pre-deltaic sequence and a younger deltaic sequence. Todd et al. (2004) summarizes the pre-deltaic sequence in stratigraphic order as fossiliferous shallow-marine fan-deltas; subaqueous sediment gravity and debris flows; and submarine fan turbidite sequences. The younger deltaic sequence consists of prodelta clays and silts; upward shoaling marine delta front facies with sandstone and coquina; transitional lagoons, brackish marshes, and tidal flats; and delta plain nonmarine facies (Todd et al., 2004).

In addition to the numerous fossil localities of the Latrania Formation, the undivided geologic units of the Imperial Group also contain several significant fossil resources, including fossil invertebrates and vertebrates. Invertebrate fossil taxa include corals, mollusks, and echinoderms; vertebrate fossil taxa include marine vertebrates, such as sea turtle, toothed whales, baleen whales, seals, sea lions, walruses, and terrestrial vertebrates, such as crocodylians, terror birds, pelican, raccoons, ground sloth, horses, camelids, and proboscideans (Jefferson et al., 2012; Donohue and Deméré, 2015). Additionally, nearly 200 fossils have been recorded from undivided units of the Imperial Group according to the records contained in the PBDB (2018). Fossil localities from undivided Imperial Group strata have yielded stony corals; bivalves, including clams, scallops, and oysters; numerous gastropods; arthropods, such as crabs and barnacles; and echinoids, such as sand dollars, pencil urchins, and sea urchins. The PBDB (2018) also contains records of shark (*Odontaspis* sp., *Squalus* sp., and *Carcharodon arnoldi*), marlin fish (Istiophoridae), sea turtle (Cheloniidae), seal (Pinnipedia), walrus (*Valenictus* sp.), dugong (Dugongidae), and toothed whale (Odontoceti). The fossiliferous deposits of the Imperial Group (undivided) suggest that this geologic unit has a high potential for paleontological resources (PFYC 4).

6.1.7 Palm Spring Group – Undivided (QTp)

Pliocene- to Pleistocene-age Palm Spring Group (undivided) consists of stream-laid sediments accumulated as deltaic deposits draining from rising Peninsular Range terrane (Dibblee and Minch, 2008a-c). The Palm Spring Group is predominantly exposed along the north side of the Coyote Mountains, but it also has excellent exposures within the Fish Creek Mountains, forming a discontinuous belt along its lower flanks. The Palm Spring Group consists of light gray to greenish-gray to tan bedded arkosic sandstones and interbedded light red clays, with many sandstones strata containing calcareous concretions of various shapes, with sporadic dark gray petrified hardwood, with grain well preserved (Dibblee and Minch, 2008a-c). Woodard (1963) described more than 3,000 meters of interbedded siltstone, claystone, arkosic sandstone, pebble conglomerate, and fresh-water limestone representing alluvial floodplain deposits marginal to the retreating Gulf of California. Later studies by Winker (1987) refined the paleoenvironmental interpretation of the Palm Spring Group, which consisted of fluvial and alluvial fan deposits and minor lacustrine deposits representing interfingering, laterally gradational deltaic and basin-marginal alluvial sedimentary facies. Laterally, the Palm Spring Group becomes coarser proximal to the surrounding mountain ranges, classified as the Canebrake Conglomerate (Woodard, 1963; Todd et al., 2004). The Palm Spring Group locally unconformably overlies the Imperial Group; however, some portions of both geologic packages intertongue (Dibblee and Minch, 2008a-c). Overall, the Palm Spring Group records the significant environmental changes that occurred in the area during the Pliocene to Pleistocene. Deposits of the Palm Spring Group formed by growth of the large Colorado River delta, which documents a wide variety of ancient depositional environments, including basin margin bajadas as preserved in the

Canebrake conglomerate and Hueso Formation; outwash play lakes as preserved in the Tapiado Claystone; locally derived streams as preserved in the Olla Formation; and distributary channels as preserved in the Arroyo Diablo Formation (McComas, 2018).

According to McComas (2018), the Palm Spring Group has yielded diverse and well-preserved fossil remains of over 100 species of Pliocene to Pleistocene terrestrial vertebrates, such as turtles, snakes, lizards, hawk, eagle, vulture, ground sloth, shrews, rodents, mastodon, camel, llama, and horse. Additionally, numerous aquatic vertebrates have been recorded, including bony fish (McComas, 2018). Fossil plants, predominantly petrified wood, including large logs, have been recorded from the Palm Spring Group (McComas, 2018). In the badlands near Plaster City, fossil localities have yielded petrified wood, land plant leaf impressions, bones and teeth of land mammals, and shells and tests of estuarine invertebrates (Donohue and Deméré, 2015). Records of fossil localities within the PBDB (2018) include birds, such as waterfowl (*Brantadorna downsi*), bufflehead (*Bucephala albeola fossilis*), stiff-tailed duck (*Oxyura bessomi*), coot (*Fulica americana*), pheasant (*Agriocharis anza*), vulture (*Neophrontops vallecitoensis*). Sediments of the Palm Spring Group have the potential to preserve scientifically significant fossils; thus, the Palm Spring Group has a high paleontological potential (PFYC 4).

6.1.8 Lake Cahuilla Beds (Qlc)

Near the base of the Santa Rose Mountains along the west side of the Salton Sea resides the former Lake Cahuilla deposits, with its fossil waterline demarcated by travertine encrustation on rock faces along the base of the Santa Rose Mountains (Norris and Webb, 1990). Lake Cahuilla was a former freshwater lake that periodically occupied a major portion of the Salton Trough during the latest Pleistocene to Holocene (McComas, 2018). According to Dibblee and Minch (2008a-c), the Lake Cahuilla beds consists of a thin series of tannish-gray claystones, sands, and gravels, rich with fossils. The ancient Lake Cahuilla's shoreline was approximately 30 to 40 feet above sea level on average, and remnants of beaches, sand spits, and bay-mouth bars can be seen along the base of the Santa Rose Mountains (Norris and Webb, 1990). The Lake Cahuilla beds record a series of lakes and fluvial systems, which formed by changes in the flow path of the Colorado River during the earliest Holocene. Although Lake Cahuilla beds are Holocene in age, they record the geologic changes that occurred in the transition from the latest Pleistocene through the latest Holocene.

According to Jefferson (2006) and McComas (2018), the Lake Cahuilla beds have yielded abundant freshwater mollusks, ostracods, fish, and vertebrates, providing paleoclimatic and paleoecological information. Whistler et al. (1995) reported that land animal fossils recorded from Lake Cahuilla sediments include freshwater fishes, such as desert pupfish, bonytail chub, stickleback, and razorback sucker; terrestrial reptiles, such as horned lizards, spiny lizards, brush lizards, shovel-nosed snakes, night snakes, gopher snakes, ground snakes, sidewinder, and rattlesnake; and terrestrial mammals, such as cottontail rabbit, pocket mouse, kangaroo rat, ground squirrel, and wood rat (Hubbs and Miller, 1948; Hubbs et al., 1960; Whistler et al., 1995; Roeder and Calvano, 2014; Donohue and Deméré, 2015). The PBDB (2018) does not contain any fossil localities from Lake Cahuilla beds; however, these beds have the potential to produce scientifically significant fossils that span the late Pleistocene to the early Holocene. The Lake Cahuilla beds have a moderate paleontological potential (PFYC 3).

6.1.9 Alluvial Terrace Deposits (Qt)

Holocene-age alluvial terrace deposits consist of patchy deposits of dissected, flat-lying alluvium near the lower flanks of the Fish Creek Mountains. According to Todd et al. (2004), these deposits consist of poorly consolidated silt, sand, and gravel that form desert pavement terraces coated with desert varnish. Dibblee and Minch (2008a-c) combine the older and younger terrace deposits, with older terraces composed of boulder to pebble gravel and sand, locally folded and faulted, and younger terraces composed of gravel and sand, locally undifferentiated from the surrounding alluvium. Holocene-age (less than 11,000 years old) sediments are typically too young to contain fossilized material (Society of Vertebrate Paleontology [SVP], 2010), but they may overlie sensitive older (e.g., Pleistocene- and Pliocene-age) deposits at variable depth. Alluvial terrace deposits are assigned low paleontological potential (PFYC 2) at the surface using BLM (2016) guidelines. However, they have an unknown paleontological potential in the subsurface since there is potential for these deposits to be conformably underlain by older, paleontologically sensitive geologic units.

6.1.10 Alluvium – Undivided (Qa)

Holocene-age alluvial deposits consist of variable compositions of unconsolidated clay, silt, sand, and gravel in valley areas (Dibblee and Minch, 2008a-c). Alluvium typically is unindurated and undissected at the surface and may be locally undifferentiated from Lake Cahuilla deposits and alluvial terrace deposits. Holocene-age sediments are typically too young to contain fossilized material (SVP, 2010), but they may overlie sensitive older deposits at variable depth. Alluvial (undivided) deposits are assigned low paleontological potential (PFYC 2) at the surface using BLM (2016) guidelines. However, they have an unknown paleontological potential in the subsurface since there is potential for these deposits to be conformably underlain by older, paleontologically sensitive geologic units.

6.2 PALEONTOLOGICAL RECORD SEARCH RESULTS

The purpose of the record searches was to determine whether any museum fossil localities occur within or adjacent to the Project area and ascertain the abundance and taxonomic diversity of fossils collected from the same geologic units elsewhere in Imperial County to assist with the determination of the paleontological potential of the Project area.

A museum records search was conducted by SDNHM, who responded to Paleo Solutions' request on April 9, 2018 (McComas, 2018). According to SDNHM, only one fossil locality, which yielded fossil plant material, has been recorded within one mile of the Project area. This locality, SDNHM 6530, consists of fossilized plant debris from the Arroyo Diablo Formation of the Palm Spring Group located one mile north [redacted] of the pipeline between Ocotillo and the Plaster City Plant (McComas, 2018).

The results of the SDNHM museum records search are presented in the confidential Appendix B.

8.0 IMPACTS TO PALEONTOLOGICAL RESOURCES

Impacts on paleontological resources can generally be classified as either direct, indirect or cumulative. Direct adverse impacts on surface or subsurface paleontological resources are the result of destruction by breakage and crushing as the result of surface disturbing actions including construction excavations. In areas that contain paleontologically sensitive geologic units, ground disturbance has the potential to adversely impact surface and subsurface paleontological resources of scientific importance. Without mitigation, these fossils and the paleontological data they could provide if properly recovered and documented, could be adversely impacted (damaged or destroyed), rendering them permanently unavailable to science and society.

Indirect impacts typically include those effects which result from the continuing implementation of management decisions and resulting activities, including normal ongoing operations of facilities constructed within a given project area. They also occur as the result of the construction of new roads and trails in areas that were previously less accessible. This increases public access and therefore increases the likelihood of the loss of paleontological resources through vandalism and unlawful collecting. Human activities that increase erosion also cause indirect impacts to surface and subsurface fossils as the result of exposure, transport, weathering, and reburial.

Cumulative impacts can result from incrementally minor but collectively significant actions taking place over a period of time. The incremental loss of paleontological resources over time as a result construction-related surface disturbance or vandalism and unlawful collection would represent a significant cumulative adverse impact because it would result in the destruction of non-renewable paleontological resources and the associated irretrievable loss of scientific information.

Excavations in the Project area that impact Miocene-age Split Mountain Group, Red Rock Formation (Tsr) and Elephant Trees Formation (Tse); Pliocene- to Miocene-age Imperial Group, Latrania Formation (Til) and undivided (Ti); Pleistocene- to Pliocene-age Palm Spring Group, undivided (QTp); and Holocene-age Lake Cahuilla beds (Qlc) may well result in an adverse direct impact on scientifically important paleontological resources. Excavations entirely within previously disturbed sediments, artificial fill, Fish Creek Gypsum (Tfc), alluvial terrace deposits (Qt), or alluvium (undivided) (Qa) are unlikely to uncover significant fossil vertebrate remains; furthermore, any recovered resources from previously disturbed sediments or artificial fill will lack stratigraphic context. However, younger deposits may shallowly overlie older *in situ* sedimentary deposits. Therefore, grading and other earthmoving activities may potentially result in significant adverse direct impacts to paleontological resources throughout portions of the Project area, with exceptions for areas underlain by Mesozoic-age undivided intrusive igneous rocks, which have a very low paleontological potential.

9.0 RECOMMENDATIONS

Due to the presence of moderate to high paleontological potential within the Project area, mitigation of potential adverse effects resulting from construction-related ground disturbance is recommended. A pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the Project area. All appropriate permits and permissions would need to be acquired prior to surveying. Only areas mapped as moderate, high, and unknown potential (PFYC 3, 4, and U) geologic units should be intensively surveyed. Areas mapped as very low and low potential (PFYC 1 and 2) geologic units should be confirmed as mapped. Following the survey, a PRMMP should be prepared by a BLM-permitted paleontologist and approved by the BLM and Imperial County. The PRMMP should provide detailed recommended monitoring locations; a description of a worker training program; detailed procedures for monitoring, fossil recovery, laboratory analysis, and museum curation; and notification procedures in the event of a fossil discovery by a paleontological monitor or other project personnel. A curation agreement with a BLM-approved fossil repository must also be obtained. Any subsurface bones or potential fossils that are unearthed during construction should be evaluated by a Qualified Paleontologist.

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APPENDIX A. OVERVIEW AND GEOLOGIC MAPS OF THE PROJECT AREA

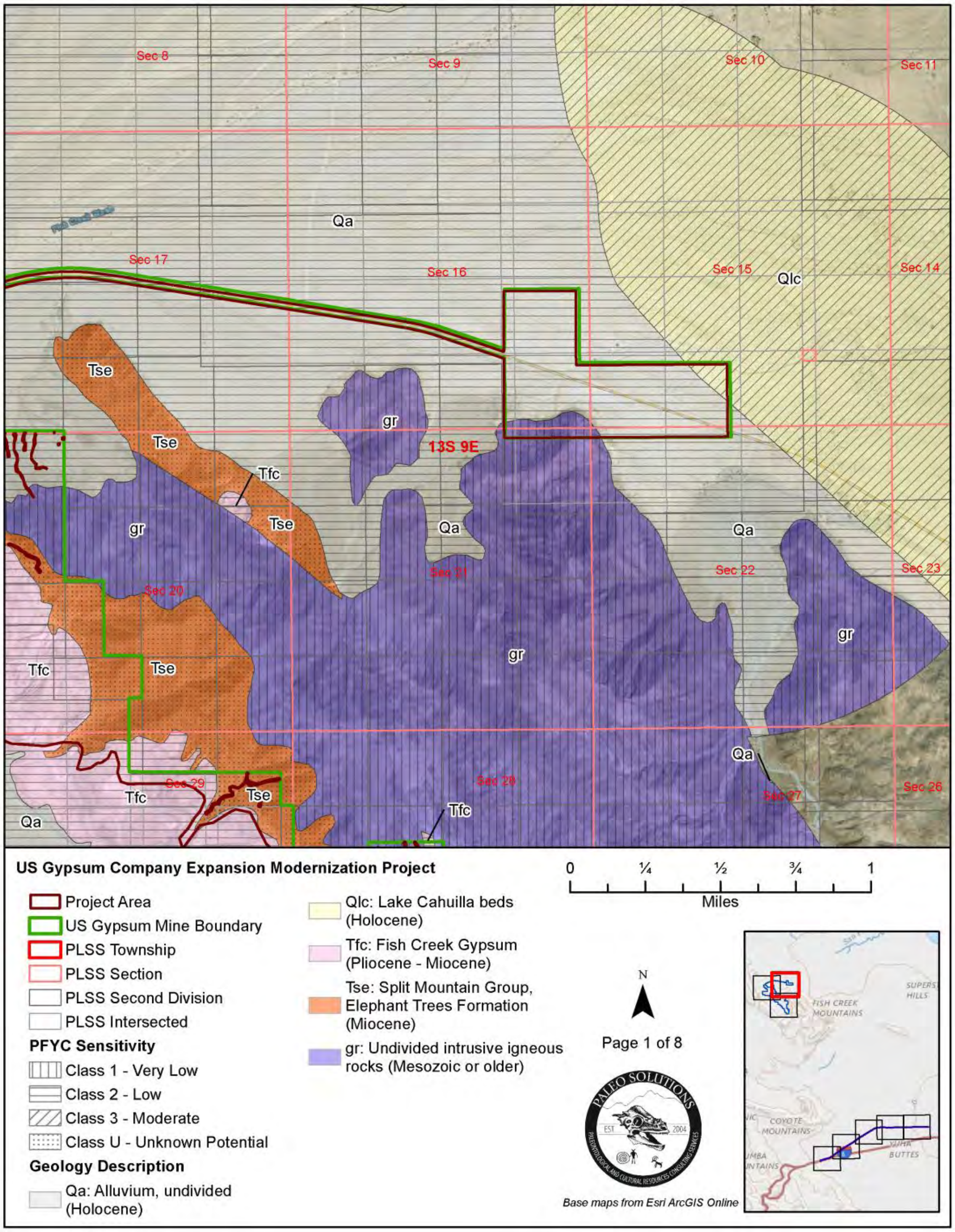
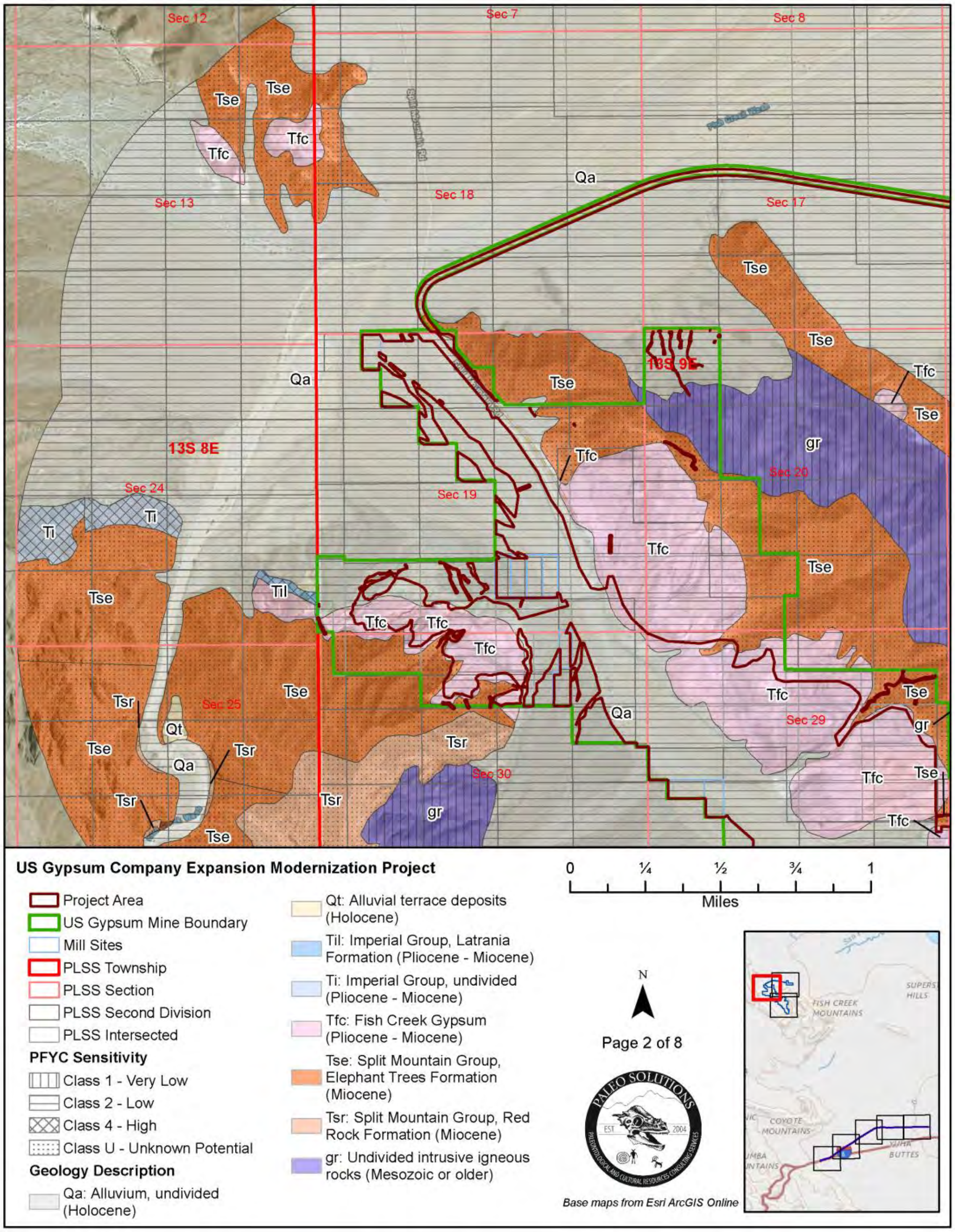


Figure A-1. Geologic Map of the Project area – Page 1.



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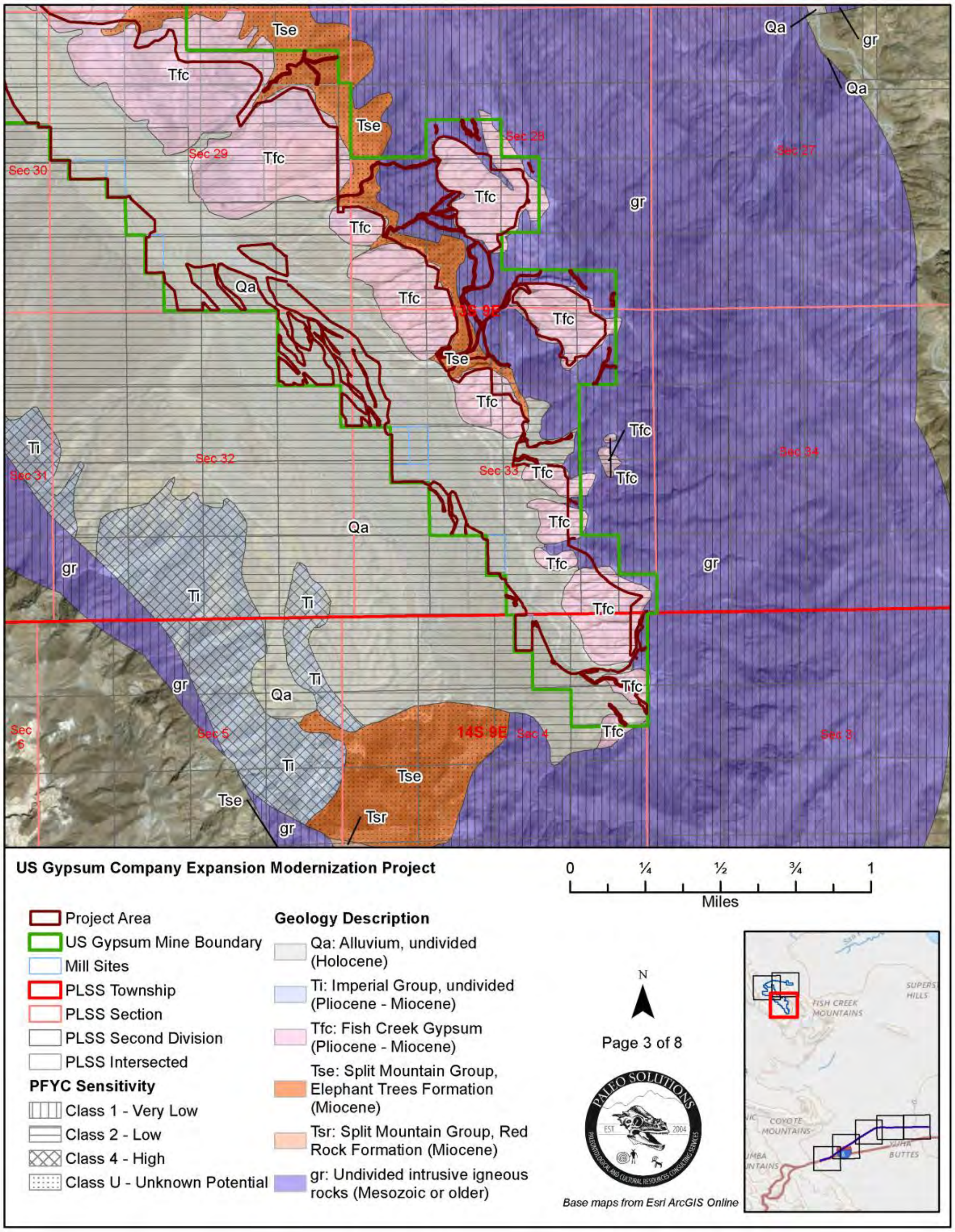

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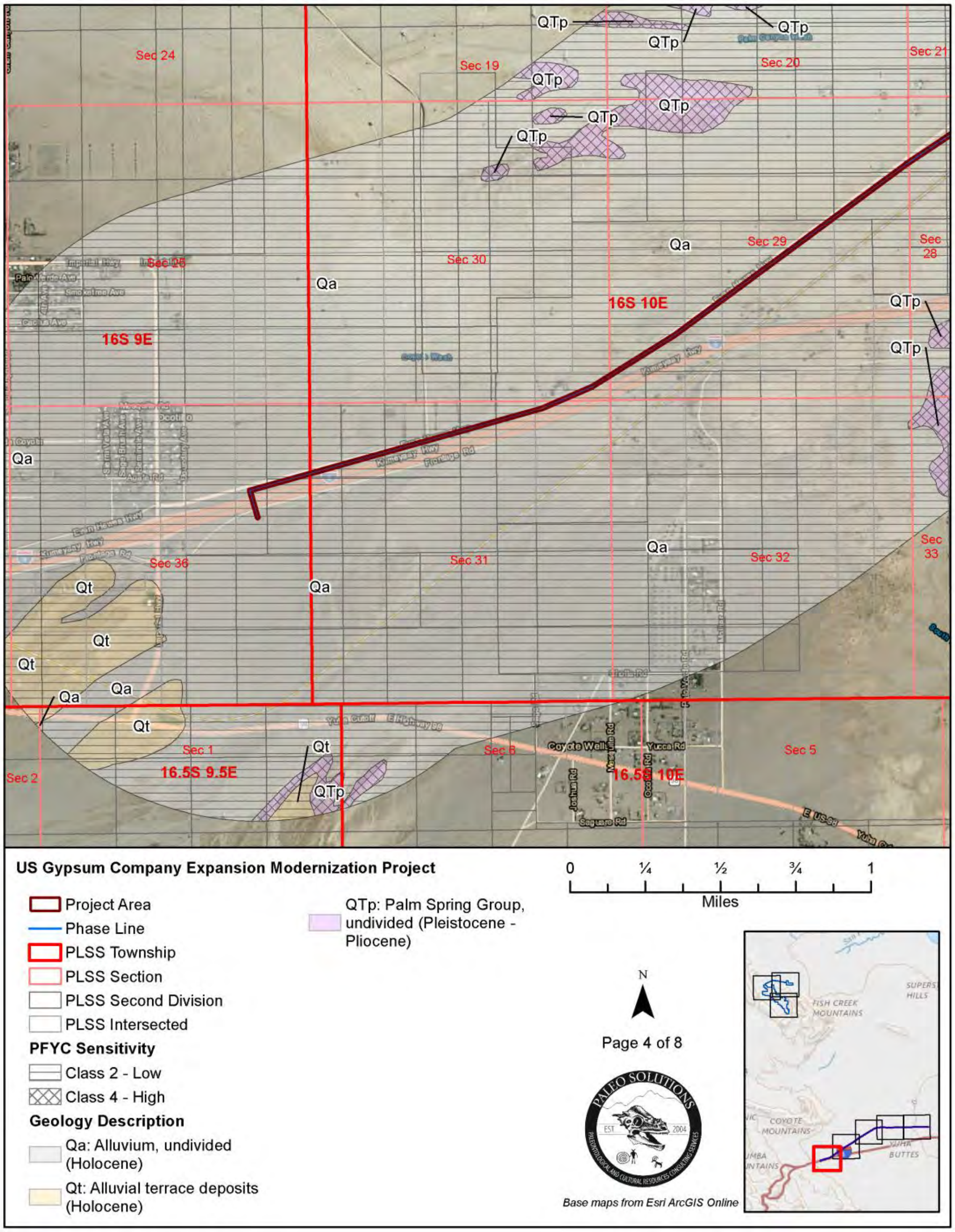

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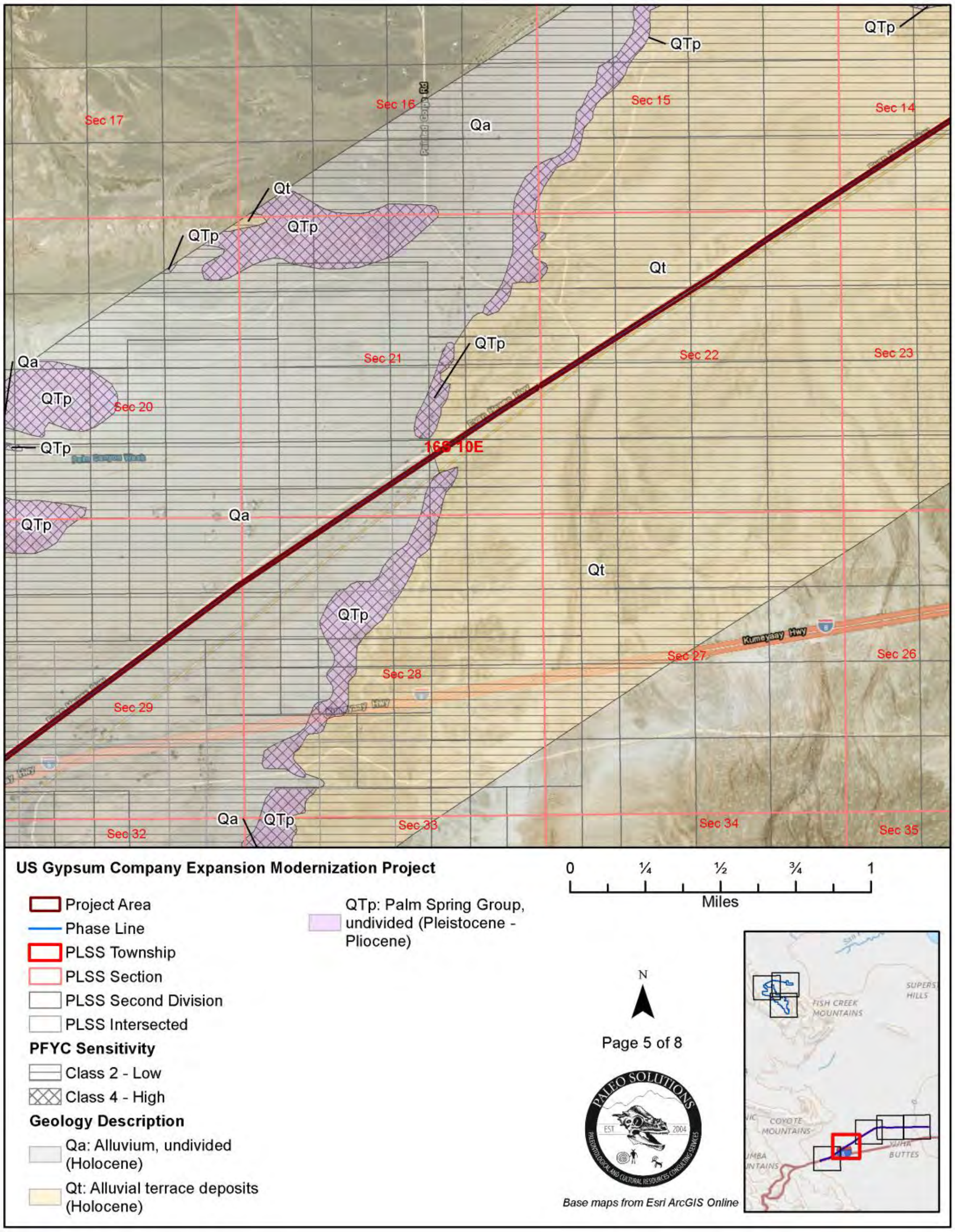

Figure A-5. Geologic Map of the Project area – Page 5.

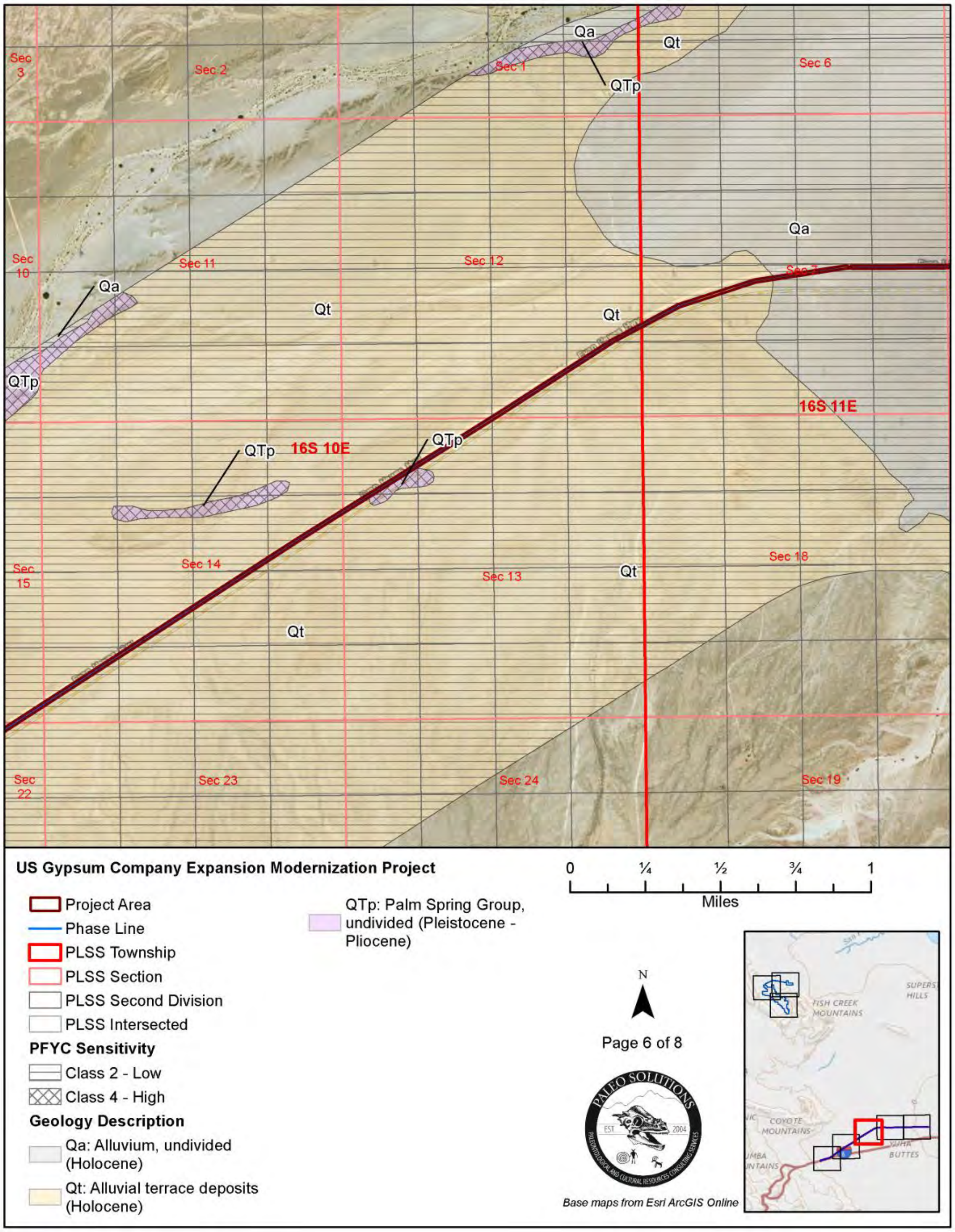

Figure A-6. Geologic Map of the Project area – Page 6.

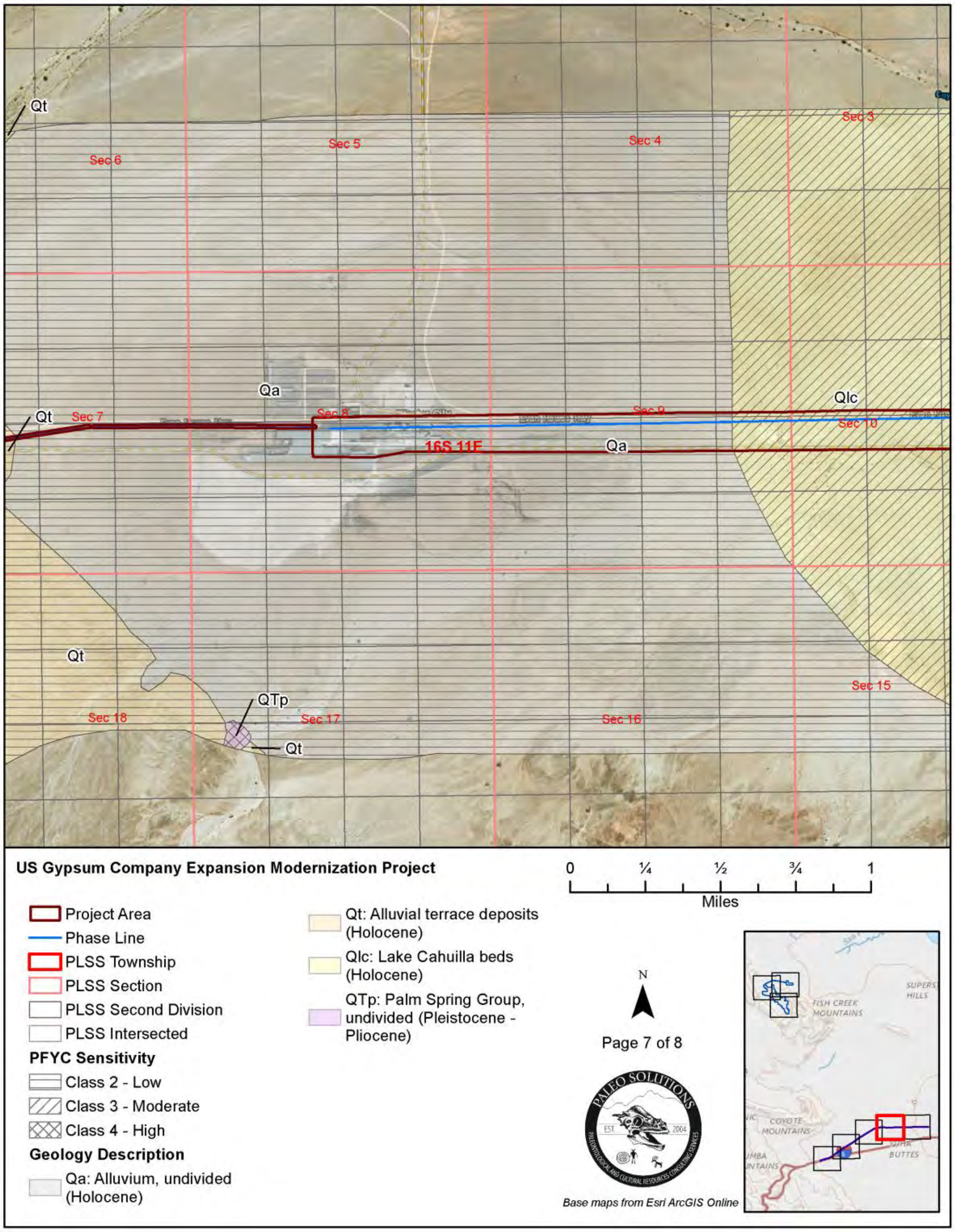

Figure A-7. Geologic Map of the Project area – Page 7.

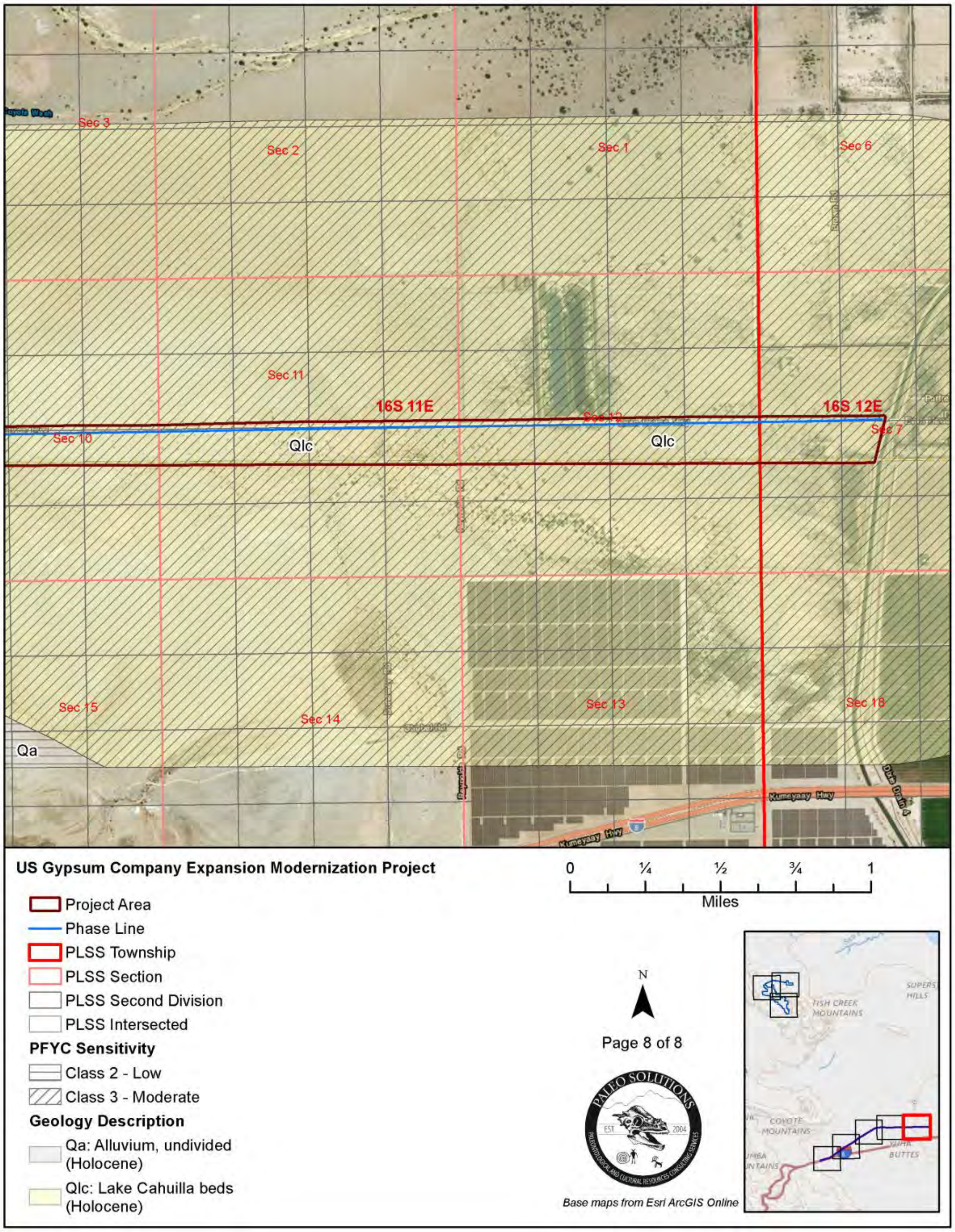

Figure A-8. Geologic Map of the Project area – Page 8.

APPENDIX B. MUSEUM RECORDS SEARCH RESULTS

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HYDROLOGY AND WATER QUALITY

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APPENDIX G-1:
2018 HYDROLOGIC AND WATER QUALITY STUDY

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HYDROLOGIC AND WATER QUALITY STUDY
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U.S. Gypsum Company
Supplemental Environmental Impact Study (EIS)
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APRIL 2018

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1 INTRODUCTION

This Hydrologic and Water Quality Technical Study ("Study") was prepared for U.S. Gypsum's Plaster City Quarry ("Quarry") at the request of the Lilburn Corporation as part of a Supplemental Environmental Impact Statement (SEIS) for United States Gypsum (USG) Company's Expansion/Modernization Project (Project). The purpose of the Study is to provide engineering and environmental analyses and documentation required to obtain regulatory agency permits for continued development of the Quarry, per the approved Mine Reclamation Plan (Lilburn, 2003).

In 2008, a Final Environmental Impact Report/ Environmental Impact Statement (EIR/EIS; RDT, 2008) was prepared for the U.S. Bureau of Land Management (BLM) and the County of Imperial as Lead Agencies for the United States Gypsum (USG) Company's Expansion/Modernization Project ("Project"). Since the submittal of the Final EIR/EIS, the U.S. Army Corps of Engineers (ACOE) has been included in the Project review process as a cooperating agency, and has requested additional hydrology and water quality studies, which will be required for the issuance of Record of Decision (ROD) by the Lead Agencies. Specifically, the ACOE has requested additional studies identifying the potential impacts of the proposed berm and recent inclusion of the 40-acre Georgia Pacific parcel within the Quarry.

This Study was conducted to model/define both the existing and proposed hydrology and water quality conditions for the Quarry watershed, and to provide an analysis of potential Project impacts to these resources. Dudek has prepared a detailed hydrologic analysis of the Quarry watershed for both the existing and proposed conditions, and a hydraulic analysis was included to assist with determining the proposed impacts to the mapped U.S. ACOE jurisdictional area (HES, 2016). The hydraulic analysis was specifically designed to identify potential impacts related to the proposed berm intended to divert runoff from entering the extraction sites, and included scour and sediment deposition analyses. Analyses were conducted using a spectrum of storm events relevant to jurisdictional delineation in the arid southwest (2-year, 5-year, 10-year), as well as storm events relevant to design assessment (25-year and 100-year).

All existing and proposed components of the Project within the Quarry watershed, including the 40-acre George Pacific property, were included in this Study's analyses. In addition, this Study will provide a review of potential hydrologic impacts related to the proposed quarry water supply improvements. Project plans and specifications found within this Study are not approved for construction purposes.

1.1 Project Description and Activity

USG's Modernization/Expansion Project within the Quarry consists of two activities: 1) the build out of the Quarry as described in the Mine Reclamation Plan (Lilburn, 2003), and 2) the development of an additional groundwater production well and supply line to the Quarry.

1.1.1 Mine Development Activities

USG currently extracts gypsum from geological deposits located in the Anza-Borrego Desert, southwest of the Salton Sea (**Figure 1-1**). Quarrying activities within this watershed have been ongoing since 1921 (with USG operating since 1945). The gypsum is shipped via rail to Plaster City where it is used to produce drywall and drywall products. USG's Quarry holdings total approximately 2,080.4 acres; 2,032.2-acres are owned by USG and 48.2-acres are active unpatented mill site claims. Ongoing development of the Quarry per the approved 2003 Mine Reclamation Plan would develop approximately 1,118.7 acres of USG's 2,032.2 acres of private land. The mine plan includes approximately 48.2 acres comprised of ten existing mill site claims; an additional five mill sites (25 acres) are proposed as part of the SEIS Proposed Action. Approximately 18.1 acres of Public Land under the management of the BLM would be disturbed by the proposed mine development. Build-out of the 2003 Mine Reclamation Plan would result in impacts to a total of 1,136.8 acres on both private and public land.

Since the submittal of the Project's EIR/EIS (RDT, 2008), a 40-acre parcel within the Quarry watershed was acquired by USG. This parcel, formerly referred to as the Georgia Pacific Parcel, falls within the Quarry boundary. There are no proposed disturbances (including mining) for this parcel.

Continued development of the Quarry would be conducted in phases, with the initial work beginning near the existing mining operations activities. Mining will consist of removing gypsum from exposed outcrops and deposits underlying alluvium within the main ephemeral channel of the Quarry watershed. Per the 2003 Mining Plan, up to 100 feet of overburden (maximum depth) will be removed to access the underlying gypsum deposits. Extraction of the underlying gypsum will progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached.

An earthen berm is proposed along the western edge of the proposed quarry extent in order to direct surface flows generated within the western half of the Quarry watershed northward to Fish Creek, around quarry activities. This berm will consist of local native material (sand and gravel). The proposed dimensions for the berm are 5 ft tall and 20 ft wide, with side slopes of 1:1.75. The proposed mining activities and earthen berm do cross a number of jurisdictional waters of the

United States Army Corp of Engineers (USACE) within the Quarry watershed. The potential impact of these Project components to jurisdictional waters is the primary focus of this Study.

1.1.2 Quarry Water Supply

USG proposes to drill a water production well (Well No. 3) on USG-privately owned land (within APN 033-020-09) to meet Quarry daily water demands (e.g., plant operations and dust suppression). The existing Quarry wells No. 1 (out of service) and No. 2 (diminishing production; currently down to 8 gallons per minute (gpm) from 20 gpm) cannot meet the daily water requirements for the operation of the Quarry; water is currently shipped in by rail from Plaster City. Well No. 3 should reduce the necessity to ship water by rail, and will be connected to the Quarry via an 8 inch pipeline installed underground alongside of the existing alignment of the narrow-gauge railroad right-of-way (ROW) CALA-040412. In addition, a power service line would be installed underground from the well head to the Quarry gate; power poles will be installed within the Quarry property. The proposed 18,240 linear feet utility line alignment is proposed approximately 30 feet north of the centerline of the existing tram road ROW CALA-040412. All waterline/powerline construction areas will be restored to pre-project conditions following the completion of construction activities. Impacts associated with the waterline/powerline are considered temporary. Impacts related to groundwater production were addressed in the Project's EIR/EIS (RDT, 2008).

1.1.3 Potential Project Pollutants

During operations and maintenance of the Project facilities, small quantities of hazardous materials may be periodically and routinely transported, used, and disposed. These materials would consist primarily of minor amounts of petroleum products (fuels and lubricating oils) and a small to moderate amounts of explosives used in extracting the gypsum ore. The handling and storage of fuels, lubricants, and explosives within the Quarry follow Mine Safety and Health Administration (MSHA) and Imperial County regulations. Small quantities of additional common hazardous materials may also be used on site, including antifreeze and coolants, latex and oil-based paint, paint thinners and other solvents, cleaning products, and herbicides.

Activities associated with the extraction of the gypsum ore also result in the disturbance/exposure of loose soils and dust, which could contribute to increased sediment loads in stormwater discharge generated from the site. While suspended sediment serve as vehicles for transporting potentially toxic pollutants (by sorption) and can contribute to the degradation of aquatic habitat (e.g., increase turbidity/temperature/EC and reduce dissolved oxygen).

Gypsum

Title 40 of the Code of Federal Regulations, Part 436 pertains to the "Mineral Mining and Processing Point Source Category." In 40 CFR Part 436 Subpart E – Gypsum Subcategory (436.50-436.52) effluent limitations are established for gypsum mining. Part 436.52 states that process water must be impounded to allow for the normal operating level as well as for the precipitation of a 10-year, 24-hour rainfall event as established by the National Climatic Center. For the Ocotillo 2 weather station located near Plaster City (32.7461°N, -116.0006°E), this amounts to 2.34" of precipitation according to the Precipitation Frequency Data Server maintained by the National Oceanic and Atmospheric Administration (NOAA).

1.1.4 Quarry Reclamation

As part of the 2003 Mine Reclamation Plan, areas disturbed by mining activities will be reclaimed to natural open space once the gypsum is removed. Quarry walls will be blasted to remove benches and smooth the topography to an overall natural slope averaging between 1H:1V to 2H:1V slopes. Upon termination of quarrying activities, equipment and structures will be removed and foundations reduced below grade and covered in place. Minimal infrastructure (e.g., trailer, access roads) will be maintained for ongoing revegetation monitoring and property security. The area will remain gated and off-limits to recreational activities.

1.2 Previous Studies

Extensive groundwater and hydrology studies were conducted and included in the 2008 EIR/EIS. Impacts to natural resources, including groundwater (quantity and quality), surface water, wildlife, and cultural resources, as a result of the Project activities within the quarry, were declared less than significant with appropriate mitigation measures. The impacts to jurisdictional (surface) waters were declared less than significant in the EIR/EIS based off of a 2004 Hydrology Study and Drainage Analysis provided by Joseph Bonadiman & Associates. This study included a rainfall/runoff analysis comparing existing with proposed conditions for the drainage area west of the proposed berm, and provided a conclusion that natural flows could be conveyed safely around the berm within a graded channel with a bottom width of 50 feet (ft) and a berm height of 5 ft (assuming 2 ft of freeboard). As approved in the 2008 EIR/EIS, Mitigation Measure 3.3-7 consists of this berm and the accompanying conveyance channel, and is required to convey flows around the Project. While Bonadiman's hydrology analysis incorporated the 50 ft-wide channel to convey flows around the Project, this analysis was conducted following the latest grading plans which do not include the conveyance channel. In addition, the 40-acre Georgia Pacific parcel was not included in the Bonadiman hydrology study (as this parcel was included later), but is in this study.

As part of the USG SEIS, Hernandez Environmental Services (HES) conducted a jurisdictional delineation for the Project in 2016 (Appendix A). Jurisdictional features identified by HES in 2016 are referenced throughout this Study.

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2 PROJECT AREA

This section provides site-specific descriptions of the pertinent Project geographic features, local and regional hydrologic characteristics, as well as receiving waterbody beneficial uses and general water quality conditions.

2.1 Project Location

The Project area currently consists of an active exposed gypsum mine within an ephemeral desert wash tributary to Fish Creek in unincorporated Imperial County, approximately 6 miles south of the City of Ocotillo, and 20 miles northwest of Plaster City. Geographically, the Project site is located adjacent to the Imperial Valley; bounded by Anza-Borrego Desert State Park and Split Mountain to the west, Fish Creek to the north, and the Fish Creek Mountains to the south and east. **Figure 1-1** presents the location of the proposed Project from a regional perspective.

2.2 Project Hydrologic Setting

The Project site falls within a 6,734 acre drainage area (Quarry watershed) in the greater Ocotillo Lower Felipe hydrologic area (HA) located within the Anza-Borrego hydrologic unit (HU) in the Colorado River Basin (**Table 2-1**). The Region, HU and HA information presented in **Table 2-1** was obtained from the California Interagency Watershed Map (Calwater 2.2.1, 2004). All existing and proposed components of the Project comprise approximately 1,100 acres.

Table 2-1
Project Hydrologic Characteristics

Region	Hydrologic Unit (HU)	Hydrologic Area (HA)
Colorado River Basin (700.00)	Anza-Borrego (722.00)	Ocotillo Lower Felipe (722.20)

Source: California Interagency Watershed Map (Calwater 2.2.1, 2004)

Figure 2-1 shows the location of the proposed project with reference to the Ocotillo Lower Felipe HA. A comparison of the proposed Project area with respect to the acreage of the Ocotillo Lower Felipe HA is presented in **Table 2-2**. The proposed Project area is approximately 0.34 percent of the area encompassed by the affected HA.

Table 2-2
Project Contribution to Hydrologic Area

Hydrologic Area	Area (Acres)	Approximate Proposed Project Area (Acres)	Estimated Project Contribution (Percent)
Ocotillo Lower Felipe (722.20)	322,686	1,100	0.34%

Source: California Interagency Watershed Map (Calwater 2.2.1, 2004)

The region is characterized by low average annual rainfall (~4.5 inches), high rates of evapotranspiration, and steep rocky terrain sloping to lower-gradient alluvial filled basins. The hydrology of the region is dominated by the brief but high intensity rainfall events that typically occur during the bi-modal winter or summer rainy seasons. The majority of these rainfall events do not produce runoff, but those with sufficient rainfall intensity can, and often result in channel forming flash floods with high scouring energy and sediment loads. Within the steeper slopes of the Quarry watershed, concentrated runoff is collected within single well-defined channels, many of which are deeply incised. Upon reaching the alluvial basin of the Quarry watershed, coarse sediment loads are deposited with loss of streamflow energy, sometimes clogging channels and directing flow into prior channels (relic channels) or creating new channels. This dynamic has led to the development of a system of braided channels within the alluvial basin of the Quarry watershed, most effectively described as a series of compound channels, , where a single dominate low-flow channel meanders through a network of relic channels and terraces, often susceptible to channel relocation during moderate to high discharge events (ACOE, 2008).

Surface flow generated from the Quarry watershed joins Fish Creek Wash just upstream where Split Mountain Road crosses Fish Creek Wash, at the apex of the Fish Creek Alluvial Fan. Similar to when the flows in the steeper Quarry watershed terrain reach the alluvial valley, surface flows that reach the Fish Creek Alluvial Fan apex lose energy and drop heavier sediment loads, often redirecting flows and forming numerous channels across the valley floor. As a typical alluvial fan, flow can be distributed across multiple channels during a single flow event (ACOE, 2008). Surface flows are typically lost to shallow infiltration in the soils adjacent the active channels (and along floodplains) which are then lost to the high evaporative demands of the region. A smaller percentage of the discharge is lost to infiltration through the channel (transmission), which ultimately becomes groundwater recharge. Groundwater recharge is typically highest near the fan apex (Houston, 2002), where the coarser material is deposited. If surface flows are sufficient enough to overcome the losses within the alluvial fan (infiltration, soil tension, evaporation and evapotranspiration), they ultimately coalesce approximately 11 miles downstream near the confluence with San Felipe Creek.

San Felipe Creek resembles a more defined single-thread channel (ACOE, 2008) which drains to the Salton Sea approximately 20 miles east of the confluence with Fish Creek Wash. Fish Creek Wash is an ephemeral drainage downstream from the Project, while San Felipe Creek gains intermittent surface flows approximately 11 miles downstream (northeast) from the Quarry. The perennial surface water in this section of the creek is fed by groundwater discharge, not from the infrequent flows generated in Fish Creek. San Felipe Creek is natural habitat for the endemic *Cyprinodon macularius* (desert pupfish) (Black, 1980).

2.3 Existing Floodplain

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) identify flood zones and areas that are susceptible to 100-year and 500-year floods. This flood zone, Zone A, designates special flood hazard areas subject to inundation by the 1% (100-year) annual chance flood but for which no base flood elevations have been determined. The drainage located in the valley of the proposed project is located within a FEMA flood zone as depicted in **Figure 2-2**. Portions of the existing and proposed gypsum mining operations fall within the 100-year flood zone (FEMA, 1984).

2.4 Groundwater

A groundwater basin is defined by the California Department of Water Resources (DWR) as a hydrogeologic unit containing one large aquifer, or a series of stacked aquifers, with definitive lateral and horizontal boundaries (2003). California's Imperial Valley, and the area bordering the Salton Sea, are characterized by one large aquifer composed of numerous smaller interconnected groundwater basins and subbasins. The proposed project is located within the approximately 153,978 acre Borrego Valley Groundwater Basin (7-24), and specifically within the 90,086 acre Ocotillo Wells Sub-Basin (7-24.02), as defined by the California Department of Water Resources (DWR) Bulletin 118.

Two groundwater wells with depth to water information were identified near the project site. Well (12S08E22E001S) located approximately 7 miles north-northwest of the project site, provides groundwater depth data for the past 66 years. Current (2016) groundwater levels at this well indicate that the depth to groundwater is greater than 110 feet. Well 12S9E23D001S, located about 7.5 northeast of the project site, shows groundwater depths greater than 150 feet from 1980 to 2014.

Groundwater quality for well 12S9E23D001S is generally characterized as sodium chlorite-sulfate water. Total dissolved solids (TDS) concentrations range between 1,650 and 1,740 milligrams per liter (mg/L).

2.5 Water Quality

2.5.1 303(d) Listed Water Bodies

Fish Creek Wash and San Felipe Creek are not listed on California's Clean Water Act Section 303(d) list of Impaired Waters for any constituents. San Felipe Creek was evaluated for Selenium impairment but the previous conclusion was reversed after analysis of three fish tissue samples taken from the creek determined that none exceeded the Office of Environmental Health Hazard Assessment (OEHHA) Fish Contaminant Goal.

The Salton Sea is 303d listed for a number of contaminants that include arsenic, low dissolved oxygen (DO), nutrients, salinity, and toxicity. The Imperial Valley Drains are listed for sedimentation/siltation and selenium, in addition to a number of pesticides and herbicides. The 303d list indicates that selenium originates from the upper Colorado River basin, which does not include the San Felipe Creek drainage.

A Total Maximum Daily Load (TMDL) has been established for sedimentation/siltation[1] in the Imperial Valley Drains, which reduced the current load of 11,000 tons per year of sediment to 4,600 tons per year. Sediment loads from Fish Creek Wash and San Felipe Creek do not reach the Imperial Valley Drains as San Felipe Creek discharges directly into the Salton Sea.

2.5.2 Beneficial Uses for Surface and Ground Waters

The Colorado River Basin RWQCB implements the *Water Quality Control Plan for the Colorado River Basin* (Basin Plan), which designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247). The Basin Plan provides quantitative and narrative criteria for a range of water quality constituents applicable to certain receiving water bodies and groundwater basins within the Colorado River Basin. Specific criteria are provided for the larger, designated water bodies within the region, as well as general criteria or guidelines for surface waters and groundwaters. In general, the narrative criteria require that degradation of water quality does not occur due to increases in pollutant loads that will adversely affect the designated beneficial uses of a water body. Surface waters within the Ocotillo Lower Felipe Hydrologic Area (722.20) and groundwaters within the Anza-Borrego Hydrologic Unit (722.00) have been assigned the following beneficial uses in the Colorado River Basin Plan as show in **Table 2-3**.

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[1] http://www.waterboards.ca.gov/coloradoriver/water_issues/programs/tmdl/tmdl_completed_projects.shtml#imperialvalley

Table 2-3
Beneficial Uses for Surface and Ground Waters

Surface and Ground Water Body	Hydrologic Unit Basin Number	Beneficial Use										
		AQUA	*MUN*	*FRSH*	*AGR*	*GWR*	*IND*	*REC1*	*REC2*	*WRM*	*WILD*	*RARE*
Washes/ Ephemeral Streams (Surface Water – includes Fish Creek)	722.20			●		●			●	●	●	
San Felipe Creek (Surface Water)	722.20			●	●	●		●	●	●	●	●
Salton Sea (Surface Water)		●					**P**	●	●	●	●	●
Anza-Borrego Hydrologic Unit (Groundwater)	722.00		●		●		●					

Source: Colorado River Basin Plan
Notes:
● = Existing Beneficial Uses
P = Potential Uses

The beneficial uses identified in **Table 2-3** for the surface water bodies in the Ocotillo Lower Felipe Hydrologic Area (San Felipe Creek and ephemeral washes such as Fish Creek) and the groundwater underlying the Anza-Borrego Hydrologic Unit are defined below:

- **Aquaculture (AQUA)** – Uses of water for aquaculture or mariculture operations including, but not limited to, propagation, cultivation, maintenance, or harvesting of aquatic plants and animals for human consumption or bait purposes.
- **Municipal and Domestic Supply (MUN)** – Includes uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
- **Freshwater Replenishment (FRSH)** – Uses of water for natural or artificial maintenance of surface water quantity or quality.
- **Agricultural Supply (AGR)** – Includes uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.

- **Ground Water Recharge (GWR)** – Uses of water for natural or artificial recharge of ground water for purposes of future extraction, maintenance of water quality, or halting salt water instruction into fresh water aquifers.
- **Industrial Service Supply (IND)** – Includes uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.
- **Contact Water Recreation (REC-1)** – Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs.
- **Non-contact Water Recreation (REC-2)** – Includes the uses of water for recreational activities involving proximity to water, but not where there is generally no body contact with water, nor any likelihood of ingestion of water. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
- **Warm Freshwater Habitat (WRM)** – Includes uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish or wildlife, including invertebrates. Includes support for reproduction and early development of warm water fish.
- **Wildlife Habitat (WILD)** – Includes uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
- **Rare, Threatened, or Endangered Species (RARE) –** Includes uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant of animal species established under state of federal law as rare, threatened or endangered.

3 REGULATORY SETTING

Part of the requirements of the SEIS is to identify potential significant impacts to hydrologic resources which could negatively affect their uses as identified by federal, state, and local policies. Regulations applicable to surface and groundwater impacts as a result of the proposed Project are defined in this section.

3.1 Clean Water Act

Under the federal Clean Water Act (33 U.S.C. 1251 et seq.) and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) (California Water Code, Section 13000 et seq.), USG is required to maintain the beneficial uses and water quality objectives of the surface water and groundwater impacted by the Project. While the U.S. Environmental Protection Agency (EPA) is responsible for enforcing the CWA, California's State Water Resources Control Board (SWRCB) has been designated the lead agency for implementing the majority of the CWA laws pertinent to the Project. The Colorado River Regional Water Quality Control Board (RWQCB) is the regional branch of the SWRCB which oversees implementation of CWA permitting and develops water quality standards and beneficial uses for the water bodies in Imperial County (per CWA Section 303).

CWA Section 303(d)

Water bodies with specific water quality impairments that cannot be addressed through the implementation of point and non-point source pollution controls (to the maximum extent practicable) are identified under Section 303(d) of the CWA. The Project is required to identify all water bodies that may be impacted water quality standards CWA Section 303 (SWRCB and RWQCB). Potential impacts as a result of the proposed Project must fall within specific numeric endpoints and/or total maximum daily loads (TMDLs) established within the state's 303(d) impaired water bodies list, or the Colorado River RWQCB's Basin Plan, to meet the water quality objectives and preserve the Beneficial Uses for all receiving water bodies.

CWA Sections 401 and 404

Under CWA Section 404, projects must obtain a permit from the ACOE if discharging dredged or fill material into waters of the United States (unless discharge is exempted). Section 401 of the CWA requires that an applicant for any federal permit (including the Section 404 permit) obtain certification from the state that the discharge would comply with other provisions of the CWA and with state water quality standards. For the Project area, the Colorado River RWQCB must provide the water quality certification required under Section 401 of the CWA.

CWA Section 402 and the Industrial General Permit (IGP)

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit (Section 402). Section 402 was amended in 1990 to include stormwater discharges associated with industrial activities. Under this program, the Mineral Mining and Processing Effluent Guidelines and Standards (40 CFR Part 436) cover wastewater discharges from mine drainage, mineral processing operations, and stormwater runoff.

The Proposed Project will be subject to the state's Industrial General Permit (Order #2014-0057-DWQ). Part 436 of this order provides the Mineral Mining and Processing Effluent Guidelines and Standards which pertain to the Project's operations. Under these guidelines/standards, dischargers are required to: eliminate unauthorized non-stormwater discharges; develop and implement SWPPPs (or amend existing to incorporate additional Project components); implement BMPs; conduct monitoring; compare monitoring results to numeric action levels; perform appropriate exceedance response actions when numeric action levels are exceeded; and certify and submit all permit registration documents. Changes under the new IGP compared to the IGP issued in 1997 are that stormwater dischargers are required to implement minimum BMPs; electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System; comply with new training expectations and roles for qualified industrial stormwater practitioners; sample to detect exceedance of annual and instantaneous numeric action levels; develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded; monitor for parameters listed under CWA Section 303(d); design treatment control BMPs for flow- and volume-based criteria; and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event. As of 2018, the Colorado RWQCB has not adopted a municipal permit for the Project area.

3.2 Surface Mining and Reclamation Act (SMARA)

The California Legislature signed SMARA into law in 1975 in order to: 1) assure reclamation of mined lands, 2) encourage production and conservation of minerals, and 3) create and maintain surface mining and reclamation policy (regulations). One of the principal requirements of SMARA is the preparation of Reclamation Plan which includes maintaining air and water quality, minimizing flooding, erosion and damage to wildlife and aquatic habitats caused by surface mining. This plan must be prepared by a mining applicant prior to initiation of mining activities. Reclamation plans must be approved by the SMARA lead agency (usually counties or cities) and the California Department of Conservation, Office of Mine Reclamation. Reclamation plans are subject to environmental review under CEQA. The County of Imperial is the SMARA lead agency for the Project and the CEQA lead agency for this Project.

3.3 Federal Emergency Management Agency (FEMA)

In order to participate in the National Flood Insurance Program (NFIP), a flood-insurance subsidization program, Imperial County is required by FEMA to develop a plan identifying existing issues, goals/objectives and policies addressing flooding in the region. Imperial County’s 2007 Flood Management Plan (FMP) provides a comprehensive risk assessment for the region. Flood hazard mitigation strategies defined in the FMP include a requirement for on-site retention (where a 100-year storm must fully drain within 72 hours) and mitigation to stormwater impacts (e.g., existing drainage courses must maintain function post-project). These mitigation strategies should be incorporated into existing land use planning and building codes, including the County’s Flood Damage Protection requirements (Title 9 Land Use Ordinance, Division 16), and Section IV-E of the County’s General Plan (Engineering Design Guidelines Manual for the Preparation and Checking of Street Improvement, Drainage and Grading Plans within Imperial County).

3.4 California Department of Fish and Wildlife (CDFW)

Under the California Fish and Game Code (Division 2, Chapter 5, section 1600-1616), projects which may impact a body of water by diversion, channel modification, and/or pollution, must procure a Section 1602 Lake or Streambed Alteration Agreement from CDFW. This requirement is a statewide measure to conserve, protect, and manage California’s biological resources, and applies to all drainage features that have historically conveyed surface flows (circa 1800 to present) with identifiable physical or biological indicators. This regulation does apply to ephemeral streams such as those within the Project site.

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4 PROJECT HYDROLOGY AND HYDRAULICS

4.1 Existing and Proposed Hydrology

The drainage area being considered for this report encompasses approximately 7,000 acres of primarily barren land. A watershed hydrologic analysis was prepared for the 2-year, 5-year, 10-year, 25-year and 100-year storm return intervals. Existing and proposed drainages (where surface flow concentrates) were delineated using a 10-meter resolution digital elevation model (DEM) provided by the United States Geological Survey (USGS, 2014), and Quarry topography surveyed in 2008 (provided by Lilburn). The peak flowrate corresponding to each of these storm intervals was determined utilizing the Riverside County Flood Control Hydrology Manual. The project site is located in Imperial County, California, however Imperial County does not have a published hydrology manual. Riverside County's hydrology manual was used as the basis for hydrologic analyses because of the similarities in watershed topography, soil types, arid region land uses and storm patterns.

A single area unit hydrograph model was prepared to facilitate the analysis of the watershed using the Riverside County 2011 AES program. All analysis was performed using NOAA Atlas 14 Precipitation Data for a 6-hour storm duration, see Appendix B for NOAA data. The land use is unchanged between the existing and proposed condition, no impervious area is proposed to be added or removed. The proposed condition hydrology reflects the fact that runoff in the existing unnamed ephemeral creek bed will be decreased by the proposed project development plan. The proposed site grading will capture runoff from the easterly portion of the watershed and convey it in a proposed drainage system. This will in affect reduce the flow tributary to the existing creek bed and provide a new flow path within the watershed. For this reason, the proposed condition watershed was analyzed as two separate drainage areas corresponding to two separate drainage paths. Hydrology maps for the existing and proposed (easterly and westerly) conditions are provided in the Exhibits section at the end of the report.

Summary tables displaying peak flow from the unit hydrograph analyses are provided below for existing and proposed conditions. **Table 4-1** displays existing condition results. Results for the proposed condition are shown separately for the east and west side of the berm in **Table 4-2**. All input and results from the hydrology model are provided in Appendix C.

Table 4-1
Existing Condition Unit Hydrograph Peak Flowrate

2-YR (cfs)	5-YR (cfs)	10-YR (cfs)	25-YR (cfs)	100-YR (cfs)
750	1,500	2,200	3,500	5,800

Table 4-2
Proposed Condition Unit Hydrograph Peak Flowrate

Watershed	2-YR (cfs)	5-YR (cfs)	10-YR (cfs)	25-YR (cfs)	100-YR (cfs)
Westerly	450	900	1,300	2,000	3,300
Easterly	350	700	1,011	1,600	2,600

The Georgia-Pacific 40-acre parcel now identified as being within the project site is shown on Exhibit 1. The Georgia-Pacific parcel was included in the hydrology and hydraulic analyses provided in this study. The parcel is part of the undeveloped easterly portion of the watershed that drains to the easterly side of the proposed berm. The land use for the parcel is unchanged in the proposed condition. None of the proposed drainage improvements are located within the 40-acre parcel, therefore no specific analysis or design recommendations have been made in that regard.

4.2 Existing and Proposed Hydraulics

Hydraulic analysis for the existing and proposed conditions was performed using HEC-RAS version 5.0.3 software based on the peak storm runoff flowrates found using methods described in previous sections.

A separate field effort was conducted for this SEIS by Juan Hernandez, Principal Biologist, at Hernandez Environmental Services in 2016, which mapped all the jurisdictional waters within the Project boundaries and delineated the Ordinary High Water Mark (OHWM). The OHWM was identified primarily from field evidence such as change in sediment, vegetation, and break in slope, and is shown on **Figure 4-1**.

The first goal of the hydraulic analysis was to determine and map the floodplain boundary corresponding to the 2-yr, 5-yr, and 10-yr storm return intervals for the existing and proposed site conditions for use in jurisdictional delineation. Existing and proposed flow paths were determined based on the topographic data provided by the Lilburn Corporation (2016). The proposed berm was modeled in HEC-RAS as a levee, which directs the program to assume that the berm will not fail or be overtopped. The flood stage estimated by the 10-year HEC-RAS model run was compared to the OHWM determined by Hernandez Environmental Services (2016).

Results of the HEC-RAS10-year hydraulic analysis for the existing and proposed condition are provided in Appendix D and in Exhibits 4 through 7. A map that compares the existing and proposed water surface extents can be seen in Exhibit 6. All input and results from the HEC-RAS model runs hydraulics model are provided in Appendix D. HEC-RAS results for the 10-

year storm (existing conditions) are mapped against the OHWM identified in the field by Hernandez Environmental Services (**Figure 4-1**).

The second goal of the hydraulic analysis was to provide an assessment of the design of the proposed berm. Design storms corresponding to the 25-year and 100-year storms were modeled in HEC-RAS to evaluate critical design parameters for the berm. The results of the 25-year and 100-year hydraulic analyses for the existing and proposed condition are provided in Appendix D. Results of the hydraulic analyses to the berm are discussed in Section 5.3.

4.2.1 Scour Calculations

Scour calculations were performed for the westerly side of the proposed berm, based on a 100-year storm event. Scour calculations look at expected scour that could occur along the main flow path for the proposed condition, approximately 23,000 feet. A work map was prepared to show the subject reach, the location of the model cross sections, limits of flooding and provide model results. The Scour and Floodplain Work Map is included as Exhibit 7. The components of scour used to determine the total maximum expected scour for a 100-yr storm event are low flow incisement, bed form scour and general scour. Each component is described in detail below.

Low-Flow Incisement scour is caused by nuisance runoff that originates from small storms that do not produce enough flow to fill the whole channel. Instead, the smaller flows create their own small channel through the main flow path, which is known as a low flow channel. Low Flow Incisement Scour was estimated based on the depth of the existing low-flow incisement throughout the flow path as indicated by the topographic contours.

Bed Form Scour is a kind of scour that develops dunes and anti-dunes, which look like peaks or troughs respectively, that occur on the channel floor. Bed Form Scour was estimated using methods developed by Simon and Li for dune and antidune formations in sand bottom washes.

General Scour describes the kind of scour that is not localized but occurs across the majority of the channel when there are no flow obstructions, such as piers. General Scour was calculated using the Blench (1969) and Lacey (1930) Regime Equations. Local scour elements were not included in the calculation because the watershed does not contain bridges. Detailed scour calculations can be found in Appendix E.

The total scour for a given cross section was taken as the sum of three scour components: Bed Form Scour, General Scour and Low-Flow Channel Incisement. A factor of safety of 1.3 was added to the total scour calculated. Scour results can be found in Table 4-3.

Table 4-3
Scour Results

Cross Section	Low Flow Incisement (ft)	Bed Form Scour (ft)	General Scour (ft)	Total Scour (ft)
23000	3	0.7	4	10
22500	3	13.9	9	34
22000	3	1.6	5	12
21500	3	2.5	6	15
21000	3	2.9	6	16
20500	3	6.8	8	24
20000	3	0.4	3	9
19500	1	2.1	4	10
19000	1	0.5	3	6
18500	1	3.4	6	13
18000	1	0.5	3	6
17500	1	0.9	4	8
17000	1	0.5	3	6
16500	1	0.8	4	7
16000	1	0.7	4	7
15500	1	1.3	4	9
15000	1	1.3	5	9
14500	1	2.3	5	11
14000	1	0.9	3	6
13500	1	0.9	3	7
13000	1	1.0	4	8
12500	1	0.7	4	7
12000	1	0.8	4	8
11500	1	0.4	3	6
11000	1	0.9	4	8
10500	1	0.6	4	7
10000	1	0.5	4	7
9500	1	0.9	4	8
9000	1	0.5	4	7
8500	1	0.7	4	8
8000	1	0.6	4	7
7500	1	3.4	5	12
7000	1	0.6	4	7
6500	1	1.5	5	9
6000	1	0.7	4	7
5500	1	0.6	4	7
5000	0.5	0.6	4	6
4500	0.5	0.3	3	5
4000	0.5	0.4	3	6

Table 4-3
Scour Results

Cross Section	Low Flow Incisement (ft)	Bed Form Scour (ft)	General Scour (ft)	Total Scour (ft)
3500	0.5	0.3	3	5
3000	0.5	0.4	3	6
2500	0.5	0.4	3	6
2000	0.5	0.2	3	5
1500	0.5	0.4	3	6
1000	0.5	0.3	4	6

4.2.2 Sediment Deposition Calculations

An evaluation of expected total sediment deposition was performed for the Project's proposed conditions at the request of the ACOE. Total sediment deposition is the amount of sediment that can be expected to reach the base of the watershed and is based on total soil loss and a sediment delivery ratio for the given watershed. The sediment deposition calculations were conducted using methods described in the United States Department of Agriculture Natural Resource Conservation Service's (NRCS) *National Engineering Handbook*, and assumed that all flows generated within the westerly drainage area are conveyed around the proposed berm.

Total soil loss is estimated using the Universal Soil Loss Equation that consists of the following factors: rainfall, erodibility, topographic, cover and support practice. The rainfall factor is selected using an average annual rainfall erosion index for a given area based on 22 years of storm data compiled by the NRCS. The erodibility factor is selected using the NRCS Soil-Erodibility Nomograph for a given soil type. The topographic factor is estimated using the NRCS Slope-Effect Chart that estimates a topographic factor using a combination of the slope and length of slope. The cover factor is selected based on land use and the type of plant cover in the area. The support practice factor is selected based on the different control practices implemented that reduce erosion potential and drainage patterns. If erosion control practices are not implemented on the site, the support practice factor is omitted.

Sediment delivery ratio is estimated based on the size of the drainage area. A figure showing the relationship between the sediment delivery ratio and drainage area can be found in the NRCS *National Engineering Handboo*k. Detailed sediment deposition calculations can be found in Appendix F.

The total sediment deposition for the proposed westerly drainage area was estimated by multiplying total soil loss calculated by the sediment delivery ratio. The sediment delivery ratio is a measure of the fraction of soil eroded and maintained in suspension compared to that which will settle out along the flow path. The sediment delivery ratio can be affected by a number of factors including sediment source, texture, nearness to the main stream, channel density, basin area, slope, length, land use/land cover, and rainfall-runoff factors. The relationship established for sediment delivery ratio and drainage area is known as the SDR curve. Coarser texture sediment and sediment from sheet and rill erosion have more chances to be deposited or to be trapped, compared to fine sediment and sediment from channel erosion. Thus the delivery ratios of sediment with coarser texture or from sheet and rill erosion are relatively lower than the fine sediment or sediment from channel erosion. A small watershed with a higher channel density has a higher sediment delivery ratio compared to a large watershed with a low channel density. A watershed with steep slopes has a higher sediment delivery ratio than a watershed with flat and wide valleys. Sediment deposition results are provided in **Table 4-4**.

Table 4-4
Sediment Deposition Results

Total Erosion (tons per year)	Sediment Delivery Ratio	Total Sediment Deposition (tons per year)
43,512	0.2	8,702

5 POTENTIAL IMPACTS AND PROPOSED ACTIONS

This section discusses the Project's potential significant impacts to water resources, and provides applicable mitigation measures for operation and management of Project conditions. Mitigation measures include structural and non-structural best management practices (BMPs) for basic Project operations, and recommendations for managing surface flows that develop west of the proposed berm.

5.1 Potential Significant Impacts and Proposed Mitigation

An analysis of the impacts identified using the hydrologic and hydraulic modeling results should be preceded by a discussion of an important modeling assumption and constraint. The development of the Quarry watershed's hydrologic parameters for this Study was based off of the most recent topographic data available (see Section 4.1). The existing channels identified in this topographic dataset are treated as static concentrated flows in the model. Based on the nature of compound drainage systems in arid regions (see Section 2.2), dominate flow paths often shift after moderate and high intensity runoff events. As this Study provides an assessment of how the additional Quarry phases and berm are going to impact the watershed's current hydrology based off of the most recent topographic dataset, it should be understood that future drainage patterns may naturally shift within and upstream the Quarry.

In addition, the geographic extent of the hydrologic and hydraulic modeling was also confined to the Quarry watershed boundary. The assessment of the proposed Quarry water supply line, as well as Project impacts to downstream hydrologic regimes (Fish Creek and San Felipe Creek), are based off of existing studies for the Project (RDT, 2008; HES, 2016) and the historical documentation of compound channel and alluvial fan hydrologic functions in the arid southwest (ACOE, 2008; Sutfin et al., 2014).

5.1.1 Hydrologic Resources

As a result of the region's infrequent but high-intensity runoff events, sparse vegetation, and steep topography, the natural hydrologic regime of the Quarry watershed consists of high scour and sediment transport potential. Surface flows generated within the Quarry watershed are typically lost to evaporation and infiltration through the coarse substrate in the alluvial basin and the downstream Fish Creek Alluvial Fan. While the proposed Project will permanently impact 134.08 acres of drainages within the Quarry watershed (Hernandez, 2016), the watershed's overall hydrologic functions can be preserved with sufficient mitigation (see Table 5-1).

Downstream, the Project will likely result in the reduction of surface flow and sediment loading to the Fish Creek Alluvial Fan (**Figure 2-1**). The potential reduction in accompanying groundwater recharge at the apex of the Fish Creek Alluvial Fan will likely be offset by increased recharge within the coarse alluvium of the Quarry watershed, and is overall considered minimal with the Project area contributing less than 1% of the total Ocotillo Lower Felipe HA land cover (see Section 2.2). As the perennial surface waters in the lower San Felipe River are not dependent on surface flows from Fish Creek Wash, the Project will have no impacts on the *C. macularius* habitat.

As addressed in the Project's EIR/EIS (RDT, 2008), the proposed groundwater production from the Quarry Well No. 3 will have a less than significant impact on the perennial waters supporting the *C. macularius* habitat. The Quarry well will draw from a deeper aquifer than what discharges to San Felipe Creek, and the presence of the San Jacinto Fault, which separates the Borrego Valley Groundwater Basin (Quarry) from the Ocotillo-Clark Valley Groundwater Basin (Lower San Felipe Creek), may serve as an additional barrier not captured in the modeling effort (RDT, 2008).

Lastly, the potential impacts to ephemeral streams along the proposed Quarry water supply line, and to downstream water bodies, were identified as less than significant. Construction activities consist of temporary excavation and filling in approximately 0.21 acres of drainages along the proposed water supply line (Hernandez, 2016), but drainage features will return to natural conditions upon completion. A complete list of potential hydrologic impacts and proposed mitigation is provided in **Table 5-1**.

5.1.2 Water Quality Resources

Potentially significant impacts to downstream water quality conditions are considered minimal due to the following:

- Runoff from the Project area will be retained in the excavation pits, thus reducing the overall discharge from the Quarry watershed. This will reduce the downstream sediment carrying capacity of flows through the Fish Creek Alluvial Fan that reach San Felipe Creek.
- There is no known presence of arsenic or selenium in the Project area, which are sources of impairments to the Salton Sea and Imperial Valley Drains.
- The Project will not generate nutrients, pesticides or herbicides, which are also listed as impairments for the Salton Sea and/or Imperial Valley Drains.
- Groundwater elevations from the nearest well (~7 miles north-northwest of the Project area) are approximately 400 feet below the lowest point in the Project area. Impacts to groundwater quality from increased localized infiltration during the infrequent storm events are considered negligible.

The potential impact to downstream water quality conditions related to the dust generated from mining activities is also not significant due to Project dust control measures and County dust control requirements. Any potentially significant impacts are reduced by the incorporation of recommendations identified in the 2008 EIR/EIS (Resource Design Technology). Per the EIR/EIS, the Project is required to follow the Imperial County Air Pollution Control District (ICAPCD) revised rule 800, General Requirements for Control of Fine Particulate Matter (PM_{10}). The EIR/EIS provides control measures that will ensure that the Project complies with the ICAPCD requirements.

Table 5-1
Potential Project Impacts and Mitigation Measures

Potential Hydrology/Water Quality Impact		Project Detail	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
Surface Hydrology (Section 5.1.1)	Increase Flooding	Project will impound flows from the eastern section of the Quarry watershed, thus reducing flows downstream.	Less than Significant	N/A	N/A
	Reduce Groundwater Recharge	Recharge to the Ocotillo Wells Sub-Basin should remain comparable after Project implementation.	Less than Significant	N/A	N/A
	Increase Scouring	While current berm design could fail and increase localized scouring at those locations, this does not exceed the natural scouring potential within the Quarry watershed.	Less than Significant	N/A	N/A
	Alter Drainage Pattern (Quarry Watershed)	The current berm does not adequately convey surface flows generated within the wester section of the Quarry watershed to Fish Creek Wash. Flow will be impounded at a number of locations.	Significant	MM 3.3-7 (2008 EIR/EIS) + Armoring (Section 5.3) The inclusion of a 50 foot-wide conveyance channel west of the proposed berm, with appropriate rip-rap armoring, will effectively convey flows to the Fish Creek Wash.	Not Significant
	Alter Drainage Pattern (Water Supply Line) Based on 2016 Jurisdictional Delineation Report (HES, 2016) and 2008 EIR/EIS	Impacts will be spatially and temporarily confined to the construction activities related to installing the waterline/powerline along the access road. The existing drainage patterns along the proposed waterline/powerline will be preserved (e.g., no anticipated fill).	Less than Significant	N/A	Less than Significant

Table 5-1
Potential Project Impacts and Mitigation Measures

Potential Hydrology/Water Quality Impact		Project Detail	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
	Provision of Habitat (WRM) 2008 EIR/EIS	The perennial waters of San Felipe Creek, which provide habitat for the endemic pup fish, are driven by local groundwater elevations and not surface flows from the Fish Creek Wash watershed. Impacts related to groundwater production from the Quarry well are not considered significant (2008 EIR/EIS)	Less than Significant	N/A	N/A
Water Quality (section 5.1.2)	Discharge Pollutants (see Section 1.1.3)	Through the implementation of proper waste and hazardous material management protocol (Sections 1.1.3 and 5.2), the Project will not be a potential source of pollutants for surface waters.	Less than Significant	N/A	N/A
	Increase Sediment Transport	The Project will ultimately reduce the amount of sediment discharged from the Quarry watershed to the downstream Fish Creek Wash.	Less than Significant	N/A	N/A
	Groundwater Quality	Impacts to groundwater quality resultant from operations at the surface are not anticipated. Significant impacts associated with groundwater production are also not anticipated (2008 EIR/EIS).	Less than Significant	N/A	N/A

5.2 Best Management Practices

To address water quality issues as identified in Section 11.3 and **Table 5-**1, storm water BMPs will be implemented during the operation and management of the Project. Runoff and erosion control BMP's shall be appropriately implemented for the Project in accordance with the Imperial County Improvement Standards (ICIS). BMPs are recommended based off of the preliminary Project plans (**Table 5-2**).

Table 5-2
Recommended Best Management Practices

Design Concept	Description Applicable to the Proposed Project
Erosion and Sediment Control	• Structures/material within flood zones should be designed to withstand anticipated scouring forces. • Minimize disturbance of natural terrain and/or compaction of soils where feasible. • Where loose soils are exposed to rainfall, consider grading designs that will minimize contact with concentrated flows. • Reduce the total hydrograph volume by increasing local storage (soil stability and evapotranspiration).
Dust Control	• Phase work to minimize disturbed areas • Apply water to or chemical stabilizer to heavily used roads/access areas • Management of bulk material shall comply with ICAPCD Rule Book Rules 800 *et seq*. • Minimize disturbance of natural terrain/biome communities.
Stormwater Management	• Runoff generated east of the proposed berm will be collected within excavated pits and conveyed through a series of depressions connecting the pits (if flows exceed pit storage). • Runoff generated west of the proposed berm will be conveyed naturally downstream. • Final berm design should consider armoring sections exposed to potential high scour (see Section 5.3).
Vehicle and Equipment Wash Areas	• When possible, dry methods of washing vehicles and equipment shall be applied. • When the use of wet methods, or acid-based solvents are required for equipment cleaning, direct application techniques will be used to limit non-stormwater discharges and other potential impacts to the drainage area.
Hazardous Waste Management	• Waste debris (e.g., petroleum products, concrete, paint) shall be stored on site in such a manner that precludes their transport into air, water, or soil.
Employee Integrated Pest Management (IPM) Principles	• Develop a pest management plan that reduces/eliminates pesticides potentially harmful to downstream aquatic habitats.

5.3 Berm Reinforcement

A complete berm design incorporating MM 3.3-7 will require, at the minimum, a 50 foot-wide conveyance channel on the western side of the berm. To assist with the conveyance of surface flows around the berm, Dudek suggests that any new berm design include armoring the westerly bank of the berm with rock riprap to decrease the likelihood and severity of erosion damage to the berm for flows generated by a 25-yr design storm. The 25-yr storm was selected because the berm is not intended to protect life, property, or civil improvements. In a larger storm event, it would be expected that the riprap armoring would fail and the berm would suffer significant damage or failure. Dudek computed the recommended berm riprap size using the computer software *Riprap Design System.* The riprap sizing methodology used by the software program is described in Section 4.1 of the Federal Highway Administration's *Hydraulic Engineering Circular No. 11: Design of Riprap Revetment*. In order to simplify the riprap section design, the westerly creek flow path was grouped into three reaches with representative slopes. The results for the riprap design calculations are provided in terms of a rock gradation by percentage lighter than the stated weight. For example, W100 means 100 percent of the rock should weigh less than the stated weight and W50 means 50% of the rock should weigh less than the stated weight. The recommended riprap gradation for a 25-yr design storm is provided below in **Tables 5-3**, **5-4**, and **5-5**. Detailed calculations can be found in Appendix G.

The rock riprap armoring section should be designed by a qualified Civil Engineer. At a minimum, the riprap armoring section should extend below grade to the calculated scour depth. The minimum section thickness is provided in the analyses summary in **Table 5-6** shown below.

Table 5-3
Riprap Design Results – Sta. 210+00 through Sta. 230+00

Percent Lighter by Weight	Mean Riprap Particle Weight (lb.)
W100	3900
W50	1400
W15	580

Table 5-4
Riprap Design Results – Sta. 150+00 through Sta. 205+00

Percent Lighter by Weight	Mean Riprap Particle Weight (lb.)
W100	200
W50	70
W15	30

Table 5-5
Riprap Design Results – Sta. 10+00 through Sta. 145+00

Percent Lighter by Weight	Mean Riprap Particle Weight (lb.)
W100	25
W50	10
W15	3

Table 5-6
Riprap Design Results – Layer Thickness

Percent Lighter by Weight	Mean Riprap Particle Weight (lb.)
210+00-230+00	4.00
150+00-205+00	1.50
10+00-145+00	0.75

5.4 Project Alternatives

No alternative berm designs have been pursued in this study as the current berm design impacts the least amount of jurisdictional (drainage) features required to access the remaining gypsum reserves (minus the ‘no-project’ alternative; RDT, 2008). Alternative berm placements suitable for conveying runoff around the proposed Project operations would require impacting additional jurisdictional features west of the current berm alignment.

6 CONCLUSION

While the proposed Project will permanently modify the existing natural stormwater conveyance system within the Quarry watershed, through proper mitigation measures (see **Table 5-1**) these impacts are not considered significant. This conclusion is based on the understanding that the main components of the region's arid hydrologic regime will be maintained, where the overall endpoint for excess rainfall in the Quarry watershed will remain the same (evaporation and groundwater recharge). The Project's current alignment of the proposed berm intersects flow channels draining the western half of the Quarry watershed which may lead to berm failure and discharge into the Project's excavation pits. To prevent this, and to fully comply with Mitigation Measure 3.3-7 (RDT, 2008), a 50 foot-wide conveyance channel will need to be included on the western side of the final berm design. Additional berm armoring is suggested to further improve the longevity of the storm water feature (Section 5.3).

Downstream from the Quarry watershed, loss of surface flow to the Fish Creek Alluvial Fan is not considered a significant impact. The Fish Creek Alluvial Fan is a series of braided ephemeral streams that do not depend on surface flows from Quarry watershed for maintaining hydrologic functions. The Quarry watershed's hydrologic connectivity to San Felipe Creek is also severely limited, where only discharge from large (i.e., infrequent) events could reach it, and the Quarry watershed only comprises 0.34% of the San Felipe Creek watershed. In addition, the *C. macularius* habitat within San Felipe Creek is sustained by groundwater discharge; aquatic habitat in San Felipe Creek is not dependent on surface flow from the Quarry watershed.

Impacts related to the proposed groundwater extraction from the Quarry Well No. 3 were covered in detail in the 2008 EIR/EIS, where it was concluded that there will be less than significant impacts to groundwater quality and groundwater discharge to San Felipe Creek. The installation of the proposed water supply line to the Quarry will result in temporary construction related impacts to a number of ephemeral drainages, but these impacts are less than significant as the anticipated impacts will not modify the existing drainages.

Proposed Project activities will need to be covered under the state's Industrial General Permit which requires the development and implementation of storm water pollution prevention programs (SWPPPs) for activities that can potentially impact water quality. Permanent Project impacts will require Section 401, 404, and 1602 permits from the RWQCB, the ACOE, and CDFW (see Section 3).

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Figures

Source: ESRI Basemap

Vicinity Map

U.S. Gypsum Hydrologic and Water Quality Study

Figure 1-1

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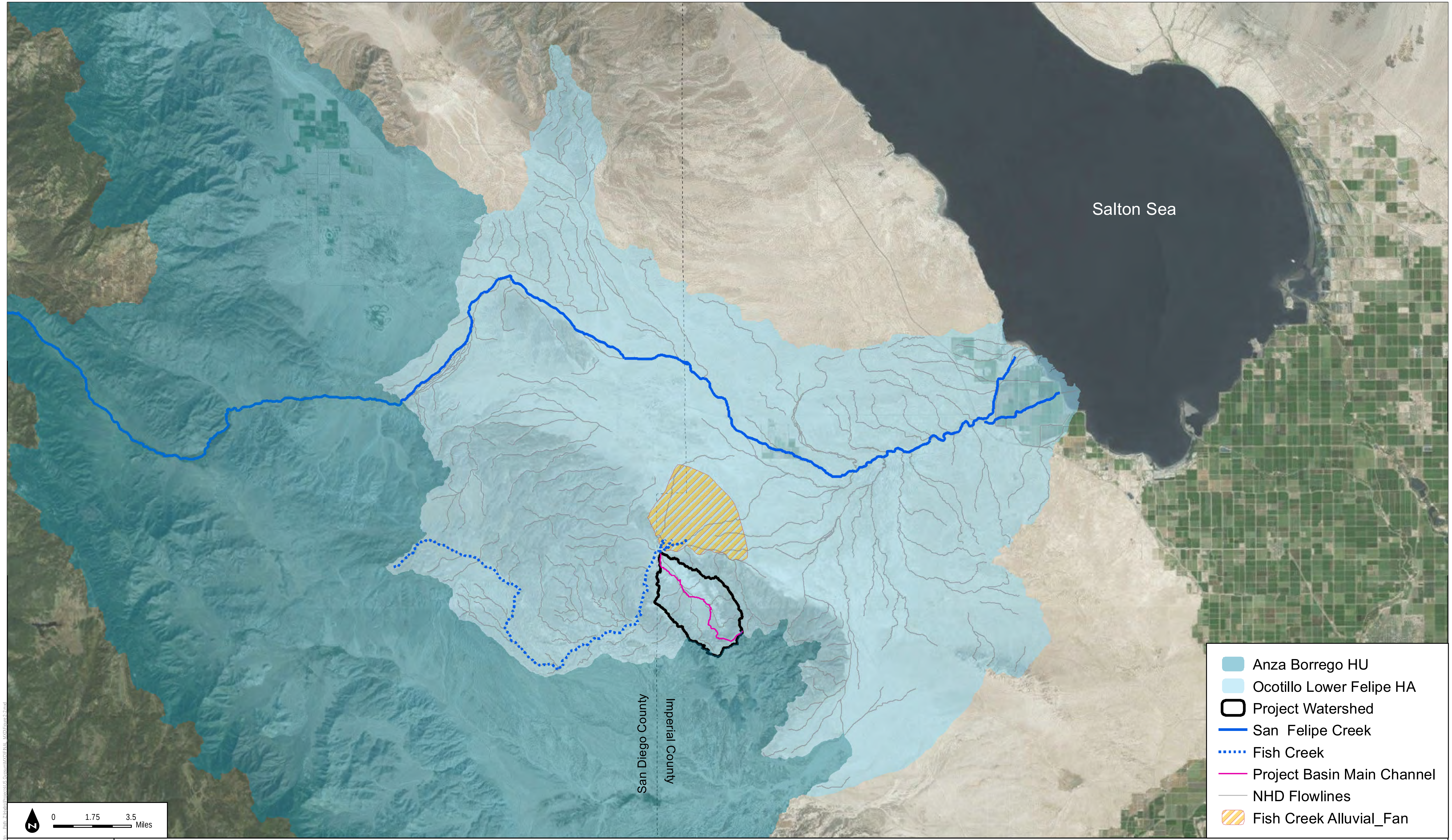

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Hydrologic Setting

U.S. Gypsum Hydrologic and Water Quality Study

Figure 2-1

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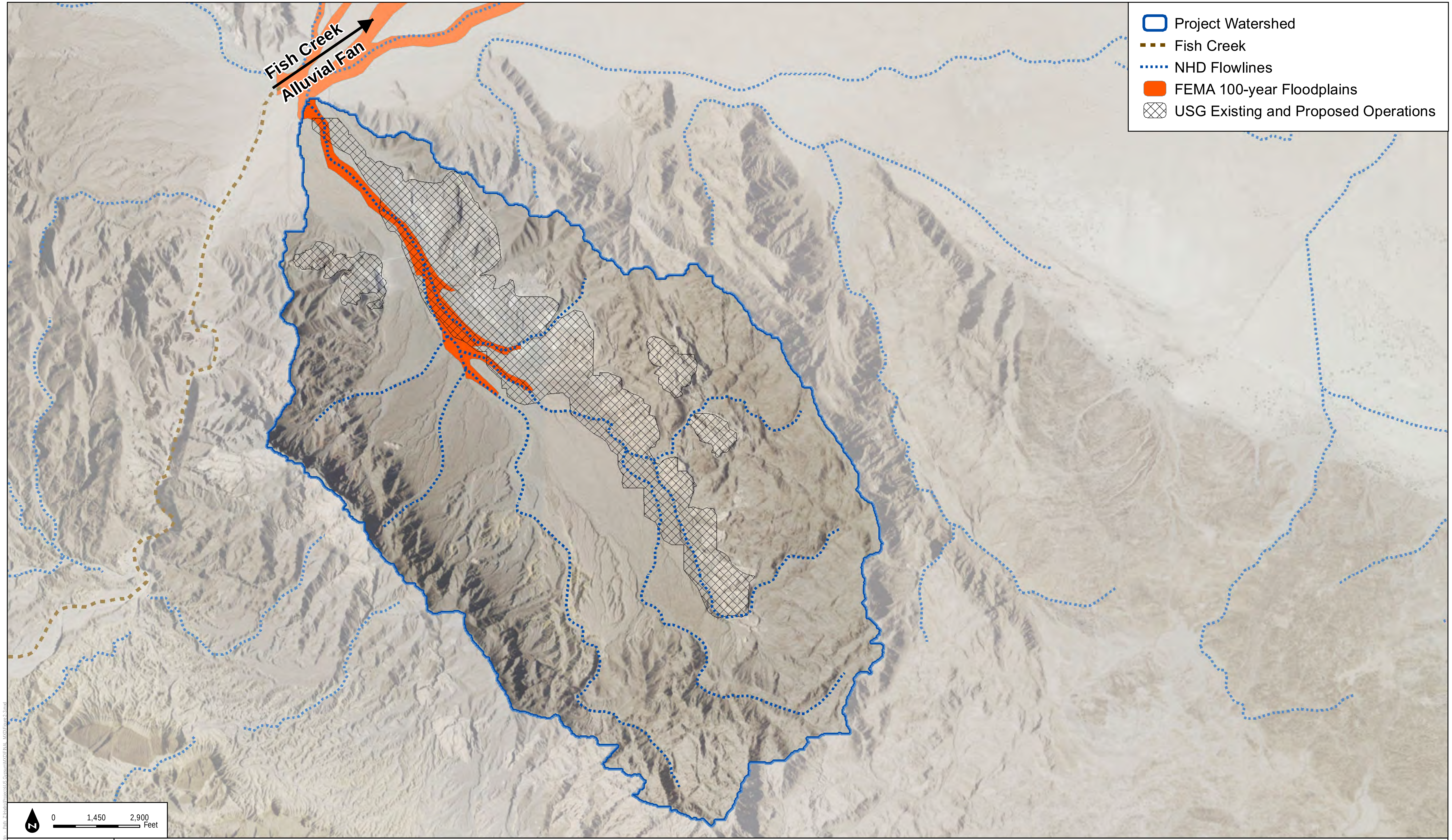
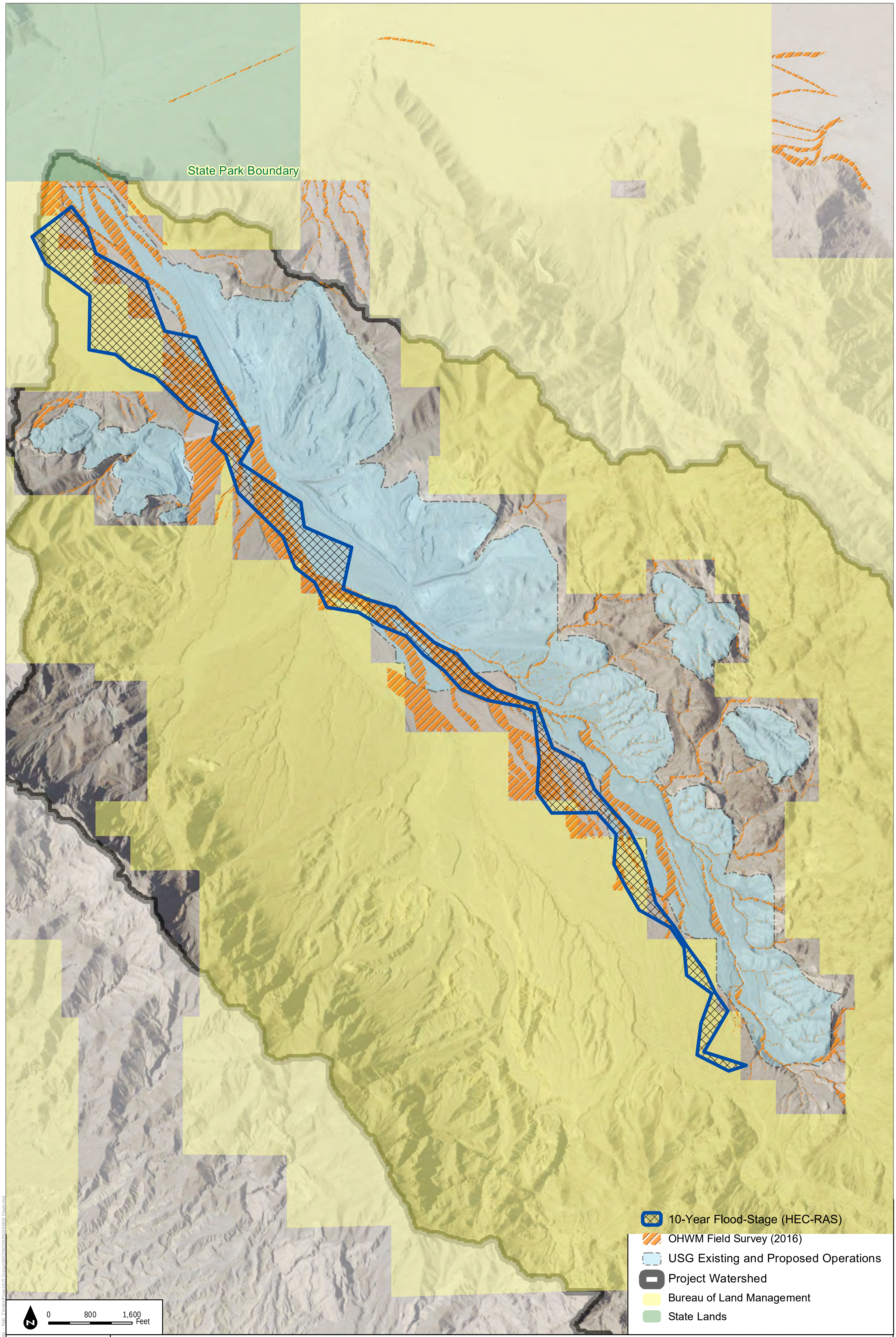


FEMA 100-Year Floodplains

U.S. Gypsum Hydrologic and Water Quality Study

Figure 2-2



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SOURCE: ESRI World Maps; USGS NHD Database

Existing Ordinay High Water Mark (OHWM) and Modeled 10-Year Flood Stage

U.S. Gypsum Hydrologic and Water Quality Study

Figure 4-1

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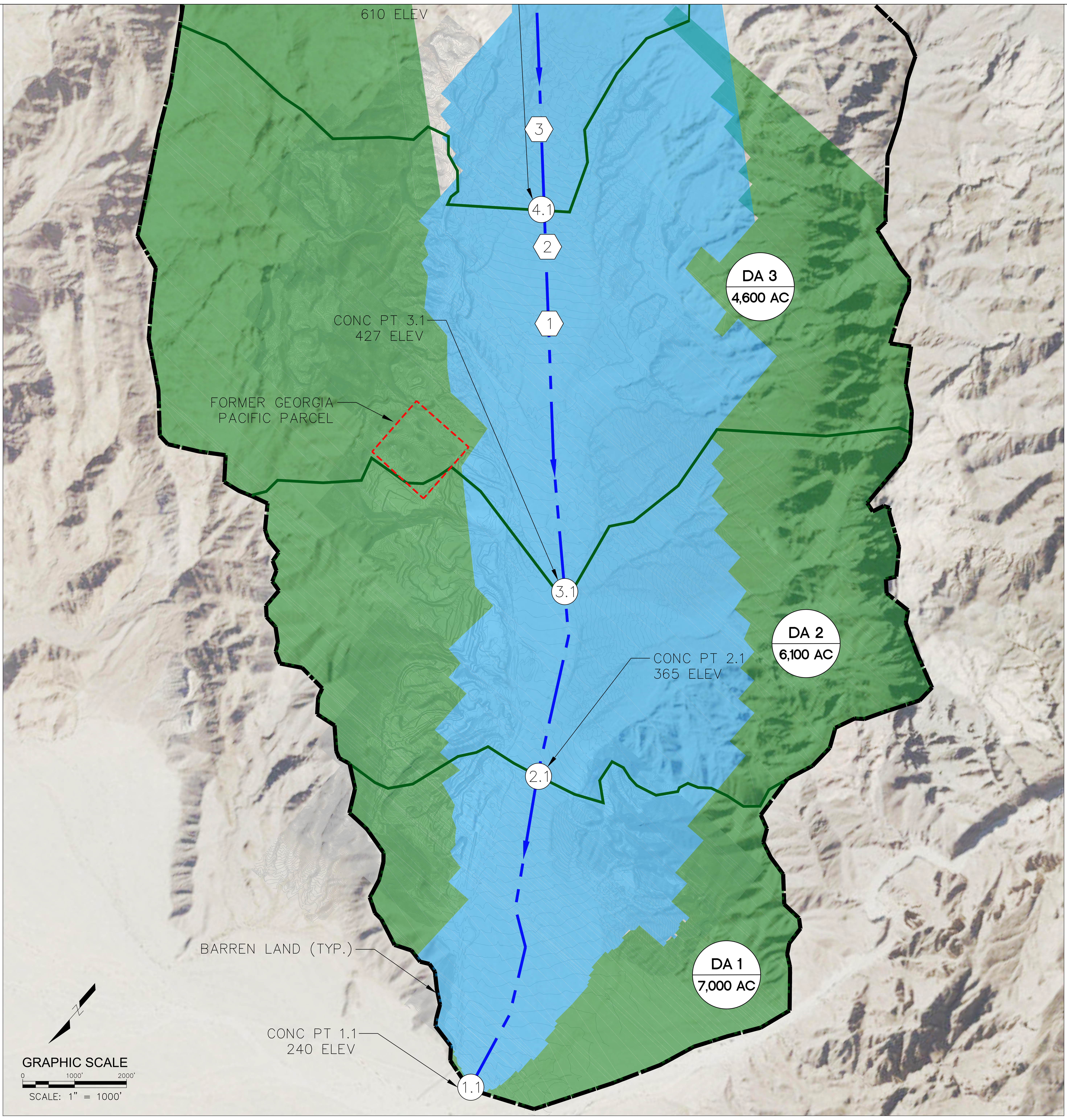
Exhibits



LEGEND

- - - -	FORMER GEORGIA PACIFIC 40-ACRE PARCEL
— · —	WATERSHED BOUNDARY
——	SUB-WATERSHED BOUNDARY
– · – · →	FLOW LINE
DA X	WATERSHED NAME
XX AC	WATERSHED AREA
X.X	CONCENTRATION POINT
X	WATERSHED CENTROID
🟦	HYDROLOGIC SOIL GROUP A
🟩	HYDROLOGIC SOIL GROUP D

UNIT HYDROGRAPH PEAK FLOW RATE (CFS)

CONCENTRATION POINT	2 YR 6 HR	5YR 6 HR	10 YR 6 HR
1.1	750	1500	2200
2.1	800	1500	2200
3.1	600	1200	1800
4.1	300	550	800

NOTE: WATERSHED AREAS ARE CUMULATIVE AND INCLUDE ANY LABELED WATERSHED AREA UPSTREAM OF THE RESPECTIVE WATERSHED CONCENTRATION POINT.

EXHIBIT 1
EXISTING CONDITION
HYDROLOGY MAP
US GYPSUM

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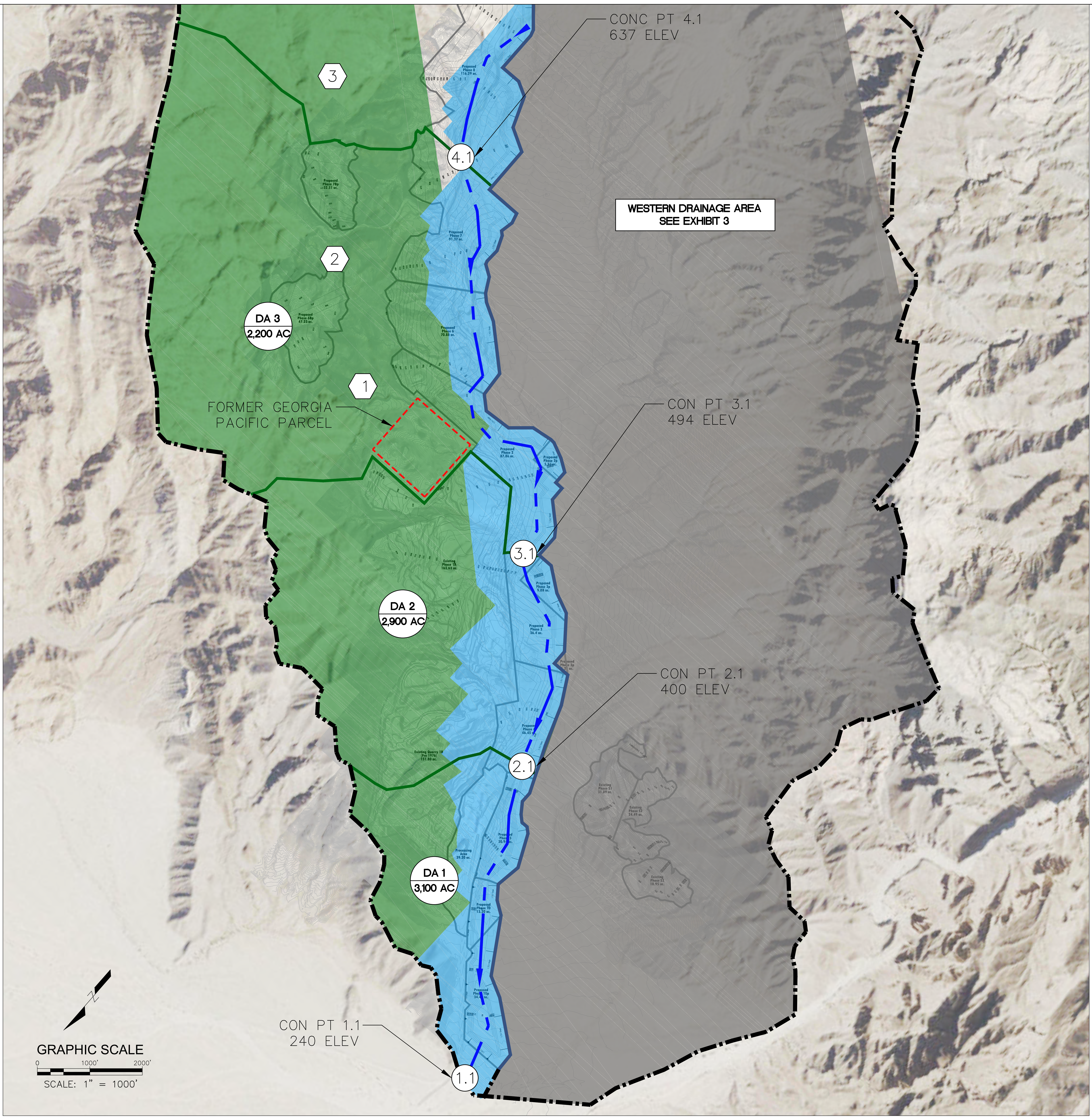

LEGEND

- - - - FORMER GEORGIA PACIFIC 40-ACRE PARCEL
— · — WATERSHED BOUNDARY
—— SUB-WATERSHED BOUNDARY
—— PROPOSED BERM
- · - ▶ FLOW LINE
DA X ——WATERSHED NAME
XX AC ——WATERSHED AREA
X.X CONCENTRATION POINT
X WATERSHED CENTROID
🟦 HYDROLOGIC SOIL GROUP A
🟩 HYDROLOGIC SOIL GROUP D

UNIT HYDROGRAPH PEAK FLOW RATE (CFS)

CONCENTRATION POINT	2 YR	5 YR	10 YR
	6 HR	6 HR	6 HR
1.1	350	700	1,000
2.1	350	700	1,000
3.1	300	600	850
4.1	200	400	500

NOTE: WATERSHED AREAS ARE CUMULATIVE AND INCLUDE ANY LABELED WATERSHED AREA UPSTREAM OF THE RESPECTIVE WATERSHED CONCENTRATION POINT.

EXHIBIT 2
EASTERN DRAINAGE AREA
PROPOSED CONDITION
HYDROLOGY MAP
US GYPSUM

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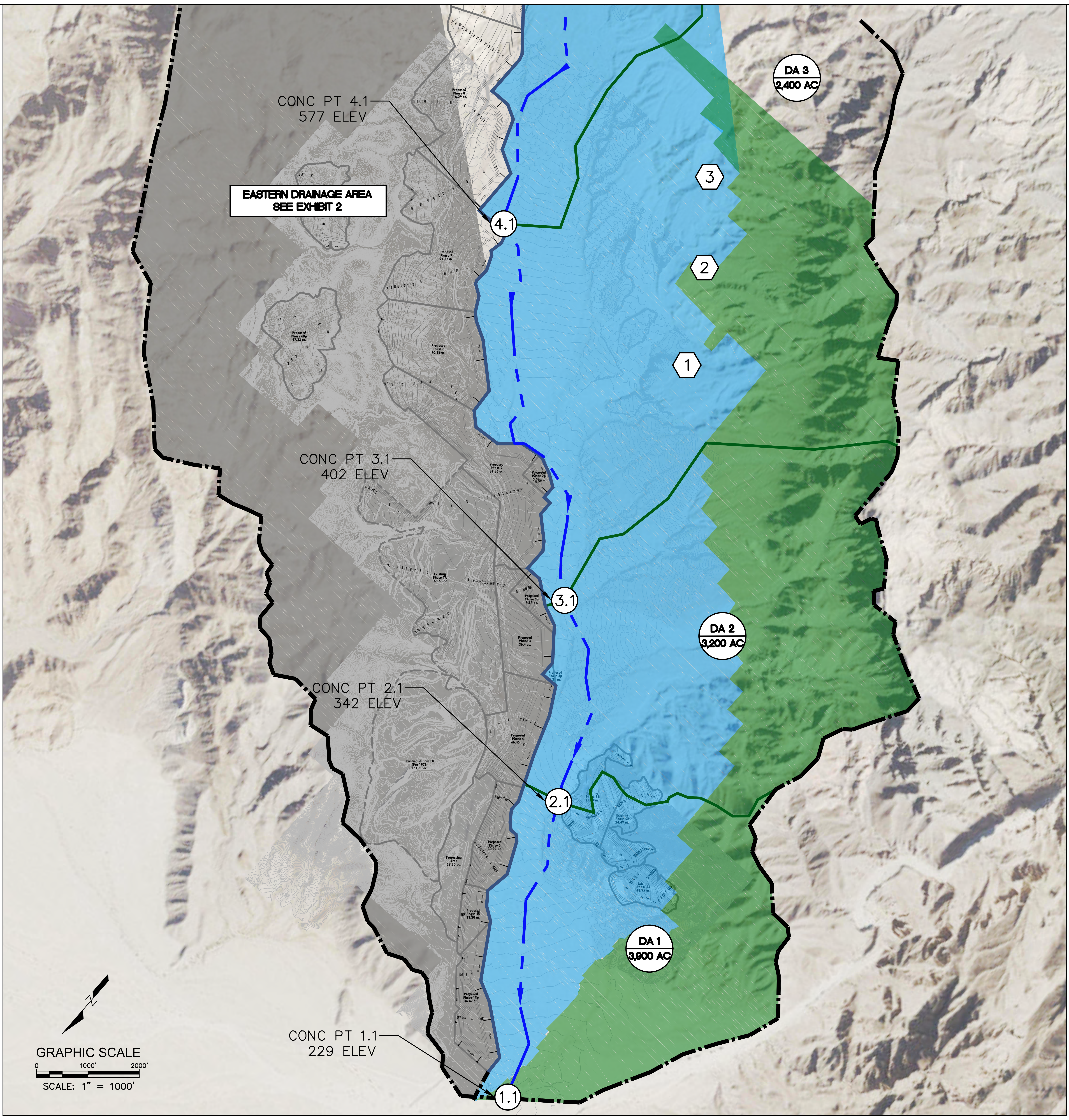

LEGEND

- ▬ · ▬ WATERSHED BOUNDARY
- ▬ SUB–WATERSHED BOUNDARY
- ▬ PROPOSED BERM
- ‒ · ‒ ▶ FLOW LINE
- DA X — WATERSHED NAME
- XX AC — WATERSHED AREA
- X.X CONCENTRATION POINT
- X WATERSHED CENTROID
- 🟦 HYDROLOGIC SOIL GROUP A
- 🟩 HYDROLOGIC SOIL GROUP D

UNIT HYDROGRAPH PEAK FLOW RATE (CFS)			
CONCENTRATION POINT	2 YR	5 YR	10 YR
	6 HR	6 HR	6 HR
1.1	450	900	1,300
2.1	450	800	1,200
3.1	350	650	950
4.1	100	200	300

NOTE: WATERSHED AREAS ARE CUMULATIVE AND INCLUDE ANY LABELED WATERSHED AREA UPSTREAM OF THE RESPECTIVE WATERSHED CONCENTRATION POINT.

EXHIBIT 3
WESTERN DRAINAGE AREA
PROPOSED CONDITION
HYDROLOGY MAP
US GYPSUM

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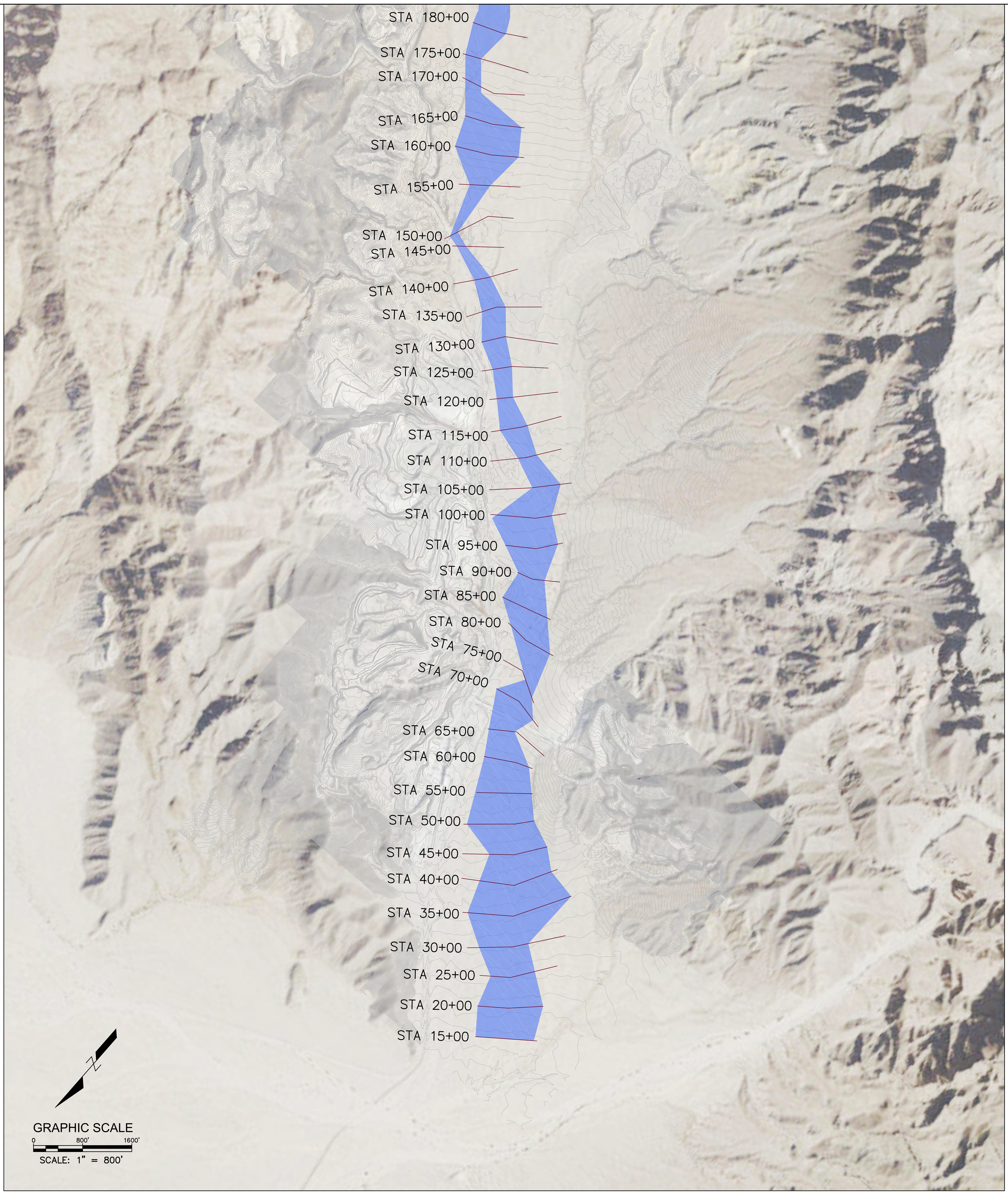

LEGEND

🟦 10-YEAR MAX WSE EXTENTS

EXHIBIT 4
EXISTING CONDITION
FLOOD PLAIN MAP
US GYPSUM

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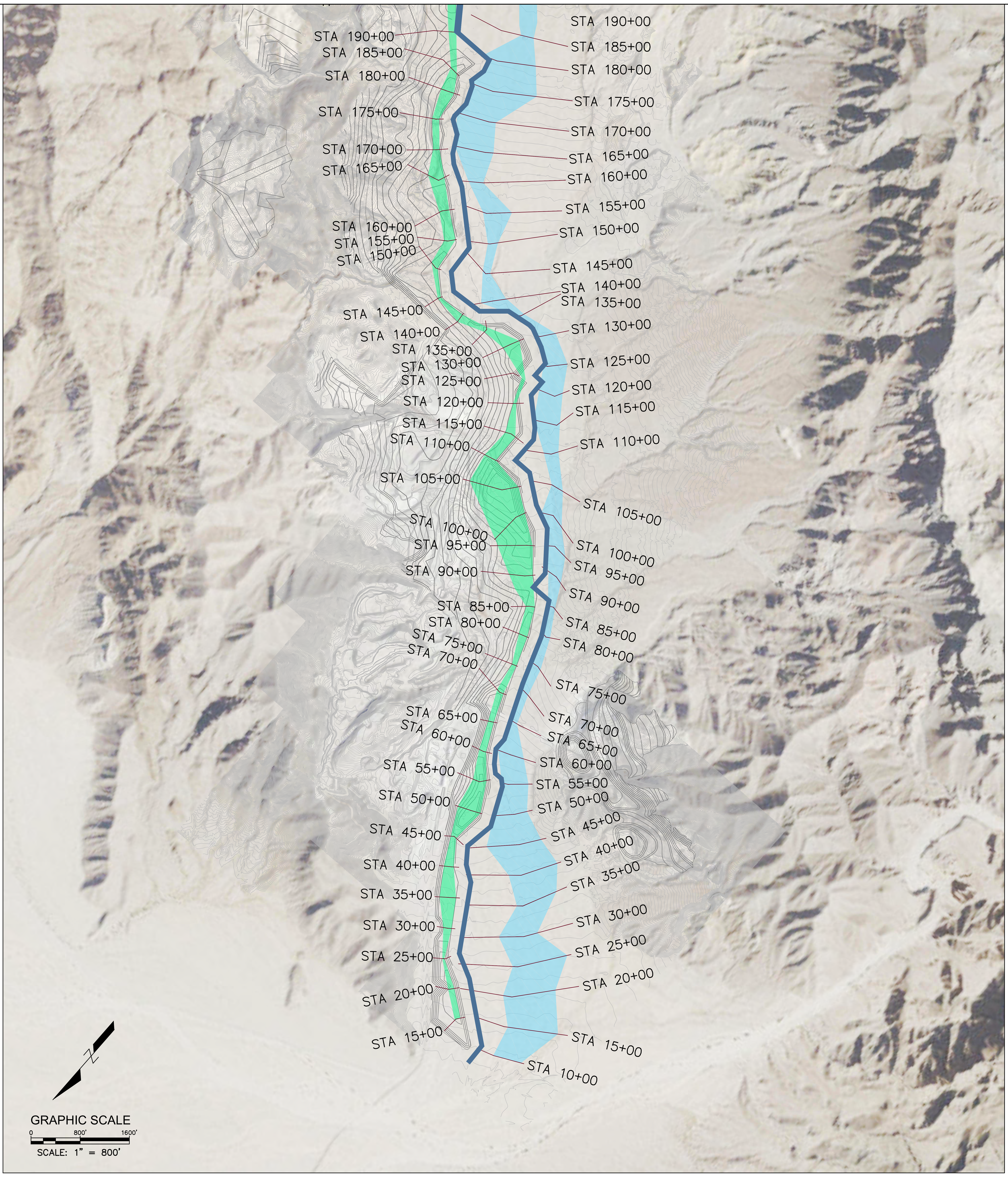

LEGEND

🟩	10-YEAR MAX WSE EXTENTS - PROPOSED EAST DRAINAGE AREA
🟦	10-YEAR MAX WSE EXTENTS - PROPOSED WEST DRAINAGE AREA
▬	PROPOSED BERM

EXHIBIT 5
PROPOSED CONDITION
FLOOD PLAIN MAP
US GYPSUM

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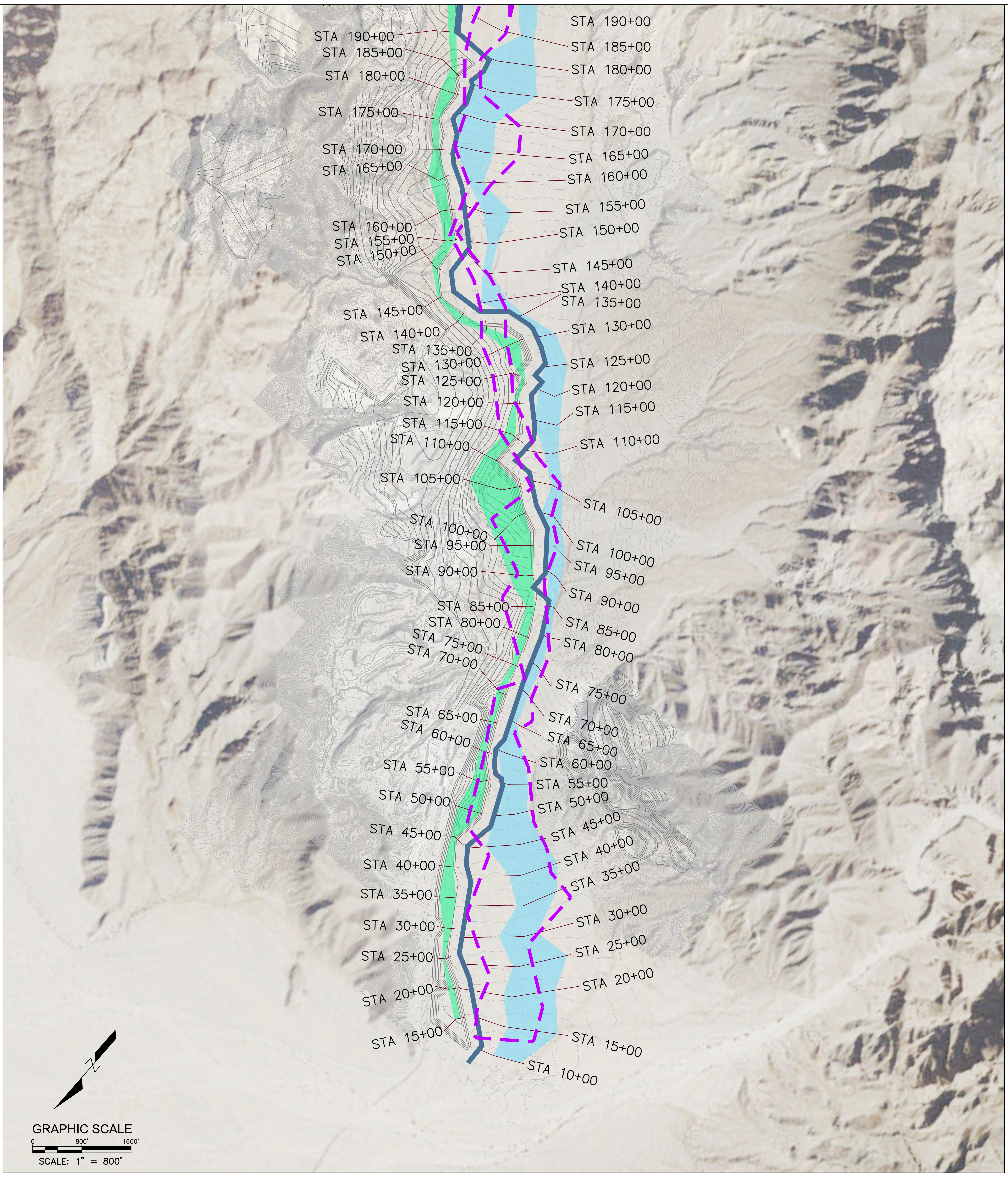

LEGEND

▭	10-YEAR MAX WSE EXTENTS - EXISTING
🟩	10-YEAR MAX WSE EXTENTS - PROPOSED EAST DRAINAGE AREA
🟦	10-YEAR MAX WSE EXTENTS - PROPOSED WEST DRAINAGE AREA
—	PROPOSED BERM

EXHIBIT 6
COMPARISON OF PROPOSED
AND EXISTING FLOOD PLAIN MAP
US GYPSUM

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17000	573	6
16500	559	7
16000	545	7
15500	531	9
15000	516	9
14500	499	11
14000	495	6
13500	494	7
13000	486	8
12500	476	7
12000	467	8
11500	459	6
11000	448	8
10500	437	7
10000	430	7
9500	421	8
9000	414	7
8500	408	8
8000	403	7
7500	387	12
7000	380	7
6500	370	9
6000	356	7
5500	345	7
5000	335	6
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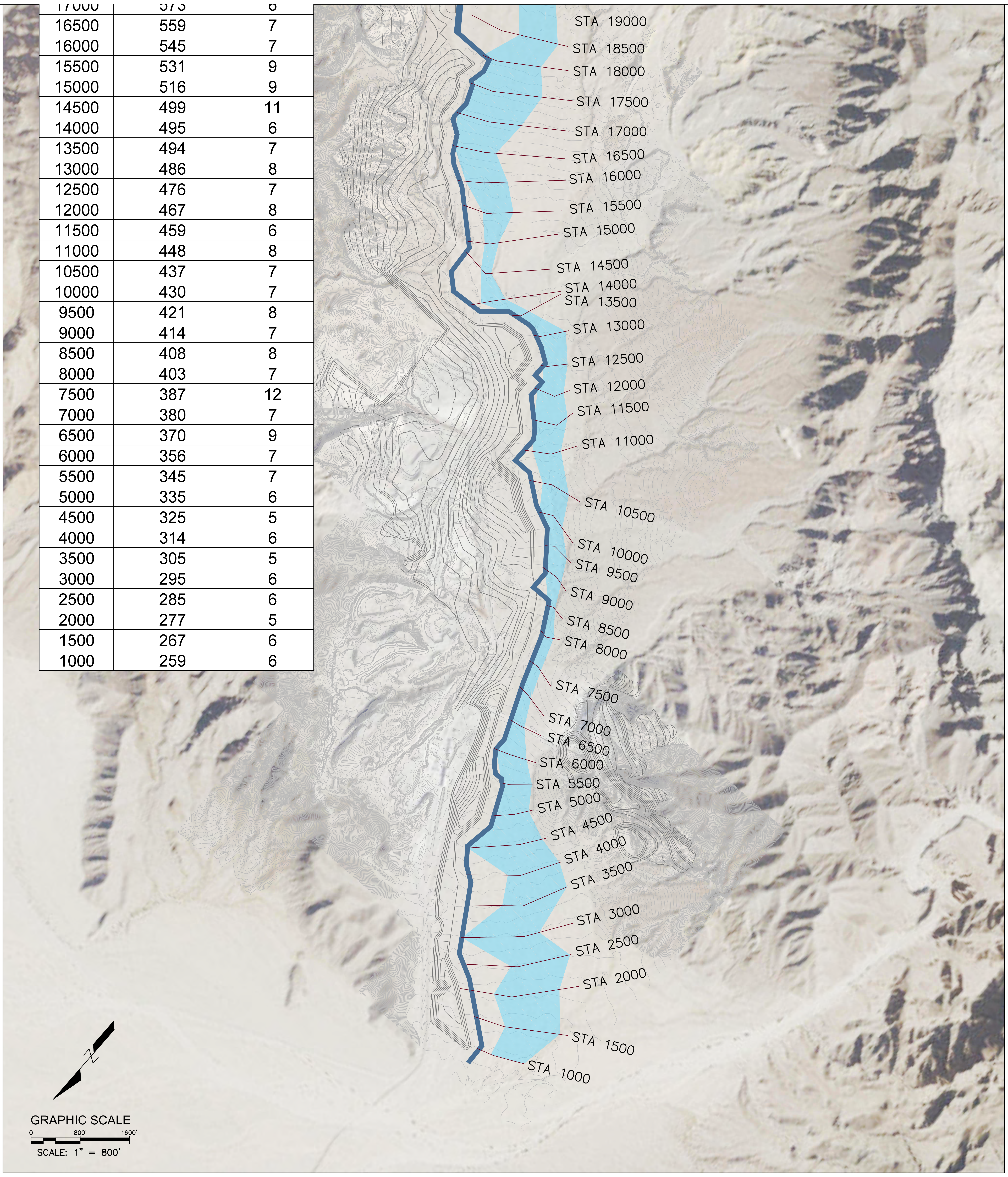
2000	277	5
1500	267	6
1000	259	6



LEGEND

🟦	100-YEAR MAX WSE EXTENTS - PROPOSED WEST DRAINAGE AREA
▬	PROPOSED BERM

EXHIBIT 7
PROPOSED CONDITION SCOUR AND
100-YR FLOOD PLAIN MAP
US GYPSUM

DUDEK

APPENDIX A

JURISDICTIONAL DELINEATION
FOR
UNITED STATES GYPSUM COMPANY

Hernandez Environmental Services, 2016

TABLE OF CONTENTS

FIGURES

APPENDICES

EXECUTIVE SUMMARY

Hernandez Environmental Services was contracted by Lilburn Corporation to prepare a Jurisdictional Delineation as part of the Supplemental EIR Process for the United States Gypsum Company (USG) Plaster City Expansion/Modernization Project. The approximate 2,080.4-acre Plaster City Quarry is located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78. The proposed USG Expansion/Modernization Project includes the expansion of quarrying activities to approximately 682 acres of private lands and 18.1 acres of public lands; the replacement of the existing 8-inch diameter water pipeline from USG's wells in Ocotillo to the Plant site; the installation of a new production water well, approximately 20,719 linear feet of water pipeline and power service line to serve the well pump; and, ultimately, reclamation of the disturbed areas to a state of natural open space.

Field surveys of the proposed USG Expansion/Modernization Project areas were conducted on April 19, 2016 through April 21, 2016. Field surveys were conducted to delineate jurisdictional drainages and wetland resources associated with jurisdictional drainages. The proposed project areas contain a total of 327.55 acres of unnamed streambeds that ultimately flow into the Salton Sea. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti)*.

The proposed USG Expansion/Modernization Project areas contain approximately 327.55 acres of ephemeral drainages that fall under the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board, Colorado River Basin Region. The proposed project areas contain no wetlands or vernal pools as defined by the 1987 Corps of Engineers Wetland Delineation Manual.

Full build-out of the Plaster City Quarry would result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and the Regional Water Quality Control Board. Activities associated with the Plaster City Plant water supply pipeline replacement would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages USG will be required to obtain a 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife for impacts to California Department of Fish and Wildlife jurisdictional streambeds. Further, USG will be required to obtain a 404 Permit from the U.S. Army Corps of Engineers, and a 401 Water Quality Certification from the Regional Water Quality Control Board for impacts to Waters of the U.S. prior to commencing the proposed USG Expansion/Modernization Project.

1.0 INTRODUCTION

1.1 PURPOSE OF JURISDICTIONAL DELINEATION

The purpose of this jurisdictional delineation is to assess the impacts of the proposed United States Gypsum Company (USG) Expansion/Modernization Project, on any State or federally regulated streams, rivers or lakes.

The following tasks were completed and are presented herein:

1. Delineation of all state or federal jurisdictional waters present within the project property;
2. Determination of impacts associated with the USG Expansion/Modernization Project on jurisdictional waters;
3. Determination of applicable state or federal regulatory permits necessary for project activities within these jurisdictional areas;
4. Recommendation of mitigation measures to offset impacts to state or federal jurisdictional waters.

1.2 PROJECT LOCATION

The USG Expansion/Modernization Project activities are proposed at two locations: (1) at the Plaster City Quarry and (2) at the Plaster City Plant (Figures 1 through 4). The location of the two areas is described below.

Plaster City Quarry

The Plaster City Quarry is located in the northwestern portion of Imperial County adjacent to the San Diego County line, approximately 17 miles from Interstate 8 and 6.5 miles from Highway 78 (Figure 2). The site is located at the northwest end of the Fish Creek Mountains, east of Split Mountain and south and east of the Fish Creek Wash. Specifically, USG's properties and unpatented placer claims and mill sites are located in portions of Sections 19, 20, 28, 29, 30, 32, and 33 of Township 13 South, Range 9 East, and portions of Section 4, Township 14 South, Range 9 East (San Bernardino Baseline and Meridian) and found on the U.S. Geological Survey Borrego Mountain Southeast Quadrangle and Carrizo Mountain Northeast Quadrangle. The Plaster City Quarry site is bounded by the Anza Borrego Desert State Park on the west and northwest, the Fish Creek Mountains Wilderness Area on the east and to the south, and public lands administered by the U.S. Bureau of Land Management (BLM) to the south. Access to the Plaster City Quarry is via State Highway 78 from both San Diego and Imperial counties.

Plaster City Plant

The Plaster City Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City, California approximately 18 miles west of El Centro in Imperial County (Figure 3). Access to the Plant is via Highway 80 immediately north of I-8.

1.3 BACKGROUND

The United States Gypsum Company (USG) owns and operates an existing wallboard manufacturing Plant and gypsum Quarry in Imperial County, California. Both the Plant and Quarry were the subject of the 2006 *United States Gypsum Company Expansion/Modernization Project Draft Environmental Impact Report/Environmental Impact Statement* (2006 Draft EIR/EIS) and 2008 *United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement* (2008 Final EIR/EIS). In compliance with CEQA, the Imperial County Board of Supervisors certified the Final EIR/EIS, adopted findings of fact, a statement of overriding considerations, and a mitigation monitoring program in March 2008. The federal Lead Agency was the U.S. Bureau of Land Management (BLM). To date, the BLM has not issued a Record of Decision and no aspects of the federal actions as analyzed in the 2006 and 2008 EIR/EIS documents have been implemented.

Presently, USG is in the process of preparing a Supplemental EIS to update technical information in the 2008 United States Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement and to include the USACE as a cooperating agency based on USACE's jurisdiction by law and special expertise pursuant to Section 404 of the Clean Water Act (33 USC 1344).

This JD has been prepared to provide technical information regarding jurisdictional water resources within the Action Area and in response to a USACE Additional Information Request dated August 15, 2014.

1.4 PROPOSED ACTION

The USG Plaster City Expansion/Modernization Project proposes activities at two different locations: at the Plaster City Quarry and at the Plaster City Plant. For purposes of organization, aspects of the Proposed Action at the USG Plaster City Quarry ("Quarry") and at the USG Plaster City Plant ("Plant") are described separately.

1.4.1 Plaster City Plant

Proposed Water Pipeline Replacement

The proposed Project includes the replacement of an existing 8-inch diameter water pipeline from USG's groundwater storage tank in Ocotillo to the Plant site. The existing pipeline would be replaced with a new 10-inch diameter water pipeline. The 2006 Draft EIR/EIS describes the 8-inch water pipeline as nearing the end of its useful life. Due to its age, the pipeline does not provide a reliable water supply for the Plant. Under existing conditions, the line experiences surges due to air in the line and water hammer caused by rapid changes in flow such as a sudden closure of a water control valve. The proposed 10-inch pipeline would provide a more reliable water supply, minimize line surges and associated leaks/rupture, provide faster water system recovery after water pipeline breaks/leaks or maintenance, and improve fire protection at the Plant.

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline and approximately 50 feet south of the highway centerline. The existing pipeline would be abandoned in place.

USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline range from two (2) to six (6) feet below ground surface.

1.4.2 Plaster City Quarry

The Expansion/Modernization Project includes two activities proposed at the Quarry: (1) installation of an approximately 20,719 linear foot (LF) waterline/powerline from Quarry Well No. 3 located on Assessor's Parcel Number (APN) 033-020-09 to the Quarry; and (2) build out the of the Plaster City Quarry as described in the Mine Reclamation Plan (Lilburn 2003).

Proposed Plaster City Quarry Water Supply

USG proposes to install a waterline/powerline extending from the Quarry to Quarry Well No. 3. Water from the well would be transported to the Quarry via a proposed pipeline installed alongside of the existing alignment of the narrow-gauge railroad right-of-way (ROW) CALA-040412 to the Quarry site. In addition, a power service line would be installed underground from the well head to the Quarry gate; power poles will be installed within the Quarry property. The proposed 20,719 LF water pipeline and power line alignment is proposed approximately 30 feet north of the centerline of the existing tram road ROW CALA-040412 between the railroad and the existing railroad access/maintenance road within Sections 16, 17, 18, and 19 Township 13 South, Range 9 East. The proposed locations of these facilities are depicted on Figure 2. The proposed utility line will be 12 inches or less in diameter. A trench, approximately five (5) feet wide and seven (7) feet deep would be excavated between the railroad and maintenance road for installation of the utilities. Material would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Access for equipment will be provided on the existing railroad maintenance road. Construction is expected to occur within a 30-foot wide area along the length of the alignment. All waterline/powerline construction areas will be restored to pre-project conditions following the completion of construction activities. Impacts associated with the waterline/powerline are considered temporary.

Plaster City Quarry – Mine Development Activities

USG's Quarry holdings total approximately 2,080.4 acres; 2,032.2-acres are owned by USG and 48.2-acres are active unpatented mill site claims. Ongoing development of the Quarry per the approved 2003 Mine Reclamation Plan would develop approximately 1,118.7 acres of USG's 2,032.2 acres of private land. The mine plan includes approximately 48.2 acres comprised of ten existing mill site claims; an additional five mill sites (25 acres) are proposed as part of the SEIS Proposed Action. Approximately 18.1 acres of Public Land under the management of the BLM would be disturbed by the proposed mine development. Build-out of the 2003 Mine Reclamation Plan would result in impacts to a total of 1,136.8 acres on both private and public land.

Mining activities would be conducted in phases as outlined in Table 1 below.

Table 1
2016 Existing and Planned Disturbance
Plaster City Quarry Mine Plan

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)	Acreage	Existing Disturbance (Approximate Acres)	Planned New Disturbance (Approximate Acres)
Processing Area	39.2	39.2	0			
Phase 1A	163.6	163.6	0.0			
Phase 1B	151.8	151.8	0.0			
Phase 2	87.9	18.5	69.4			
Phase 2p	5.3	0.0	5.3			
Butte Mill Site				5.0	0.0	0.9
Phase 3	36.4	5.0	31.4			
Phase 3p	1.2	0.0	1.2			
Phase 4	46.4	15.3	31.1			
Phase 5	29.8	7.4	22.4			
Annex Mill Site #4				5.0	0.0	2.5
Annex Mill Site #3				5.0	0.0	0.3
Phase 6	78.9	1.7	77.2			
Phase 6Bp	47.2	0.0	47.2			
Haul Road to 6Bp	9.1	0.0	9.1			
Phase 7Bp	32.5	0.0	32.5			
Haul Road to 7Bp	5.8	0.0	5.8			
Phase 7	90.3	1.8	88.5			

Phase & Areas	USG Private Lands			BLM Lands		
	Acreage	**Existing Disturbance (Approximate Acres)**	**Planned New Disturbance (Approximate Acres)**	**Acreage**	**Existing Disturbance (Approximate Acres)**	**Planned New Disturbance (Approximate Acres)**
Phase 8	114.3	0.0	114.3			
Cactus Mill Site				5.0	0.0	3.2
Phase 9	54.2	0.0	54.2			
Desert Mill Site				5.0	0.0	0.1
Phase 10	13.2	2.1	11.1			
Phase 10p	34.2	0.0	34.2			
Shoveler Haul Road		2.1	0.0			
Annex Mill Site #1				5.0	1.1	0.0
Phase S1	31.9	21.5	10.4			
Phase S2	24.5	3.2	21.3			
Phase S3	18.9	3.5	15.4			
Peoria Mill Site				3.4	0.0	0.0
Springfield Mill Site				4.8	0.0	0.0
Anchorage Mill Site				5.0	0	0
Annex Mill Site #2				5.0	0	0
Future Mill Site 1				5.0	0.0	0.4
Future Mill Site 2				5.0	0.0	3.2
Future Mill Site 3				5.0	0.0	1.8
Future Mill Site 4				5.0	0.0	4.9
Future Mill Site 5				5.0	0.0	0.8
TOTALS	**1,118.7**	**436.7**	**682.0**	**73.2**	**1.1**	**18.1**

Alluvial Quarrying and Ephemeral Drainages

As shown in the 2003 Mine Plan, as quarrying of gypsum outcrops extends southward in the mine plan area, the gypsum underlying alluvial overburden will be developed and extracted. Quarrying of the alluvial wash deposits will progress downward and westward to a maximum overburden depth of 100 feet. Extraction of the underlying gypsum will progress downward from the toe of the overburden strip slope in 25-foot vertical benches at a maximum stable slope of 1H:1V (Horizontal:Vertical) until the bottom of the mineable zone is reached. The depth of each Plaster City Mine Quarry phase will vary based on the bottom limit of gypsum.

An earthen berm will be constructed along the west side of the developed quarry in order to preserve the natural drainage pathway. The proposed berm would work as a natural earth channel, with one side of the channel that will preserve the existing characteristic of the drainage area to the west and will protect the quarry operations to the east from floodwaters. A hydrology study and drainage analysis (Joseph E. Bonadiman & Associates Inc., July 2004) determined that a 5-foot high by 20-foot wide retention berm that includes two feet of freeboard would adequately divert flows towards Fish Creek Wash.

Phases or portions of phases in the alluvial wash will require the stripping of alluvial material or overburden to expose the gypsum. As overburden is stripped a portion will be pushed to the east bank of the wash and the furthest south limits of the planned disturbance to form a permanent retention berm. The purpose of the berm is to divert sheet flow from the Quarry operations in the event of storm runoff. A second berm consisting of the top one foot of surface alluvium will be pushed over the western wash quarry slopes and used as surface soil upon reclamation. Remaining overburden may be stockpiled for a short period of time but will typically be pushed into the adjoining mined out areas for reclamation of the slopes such that overburden from Phase 3 will be used in Phase 2, overburden from Phase 4 will be used in Phase 3, and so forth.

Plaster City Quarry Reclamation

The Mine Reclamation Plan is divided into areas based upon the current geological data, quantity and quality of gypsum, market demand and proximity to the Plant. Following the removal of gypsum, the disturbed areas would be reclaimed to a state of natural open space. Reclamation activities are described in the Mine Reclamation Plan (Lilburn 2003); reclamation activities associated with restoration of drainages are summarized herein.

As described in the Mine Reclamation Plan, on-site hillsides and outcrops are erosional features of the landscape and are expected to continue to erode throughout mining and reclamation. This process would continue to sculpt the Quarry benches, eroding the manmade lines of the bench faces. Pre-mining drainages would be maintained where possible. Disturbance would be limited in these drainages. If necessary, standard erosion control measures such as rip-rap would be placed in the drainages to reduce flow and erosion. Surface flows would be directed around the quarry phases and into the main quarry wash by the proposed Quarry berm.

The Mine Plan would retain drainage within the main quarry wash with berms created from overburden materials. Ultimately, the wash would be lowered along its eastern edge, extending from Phase 9 of the Mine Plan at the uppermost elevation to Phase 10 at the lowest. Phase 10 would be mined contiguous with Phase 5 at its upstream end and to grade at its downstream end. Surface flow that exits the ultimate reclaimed channel would merge with the existing wash at the foot of Phase 10 in buildout conditions.

2.0 REGULATORY FRAMEWORK

2.1 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE STREAMBED ALTERATION AGREEMENT

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the California Fish and Game Code (F&GC), requires that the CDFW be consulted if a proposed development project has the potential to detrimentally effect a stream and thereby wildlife resources that depend on a stream for continued viability (F&GC Division 2, Chapter 5, section 1600-1616). A Section 1602 Lake or Streambed Alteration Agreement is required, should the CDFW determine that the proposed project may do one or more of the following:

- Substantially divert or obstruct the natural flow of any river, stream or lake;
- Substantially change or use any material from the bed, channel or bank of any river, stream, or lake; or
- Deposit debris, waste or other materials that could pass into any river, stream or lake.

For the purposes of clarification, a stream is defined by CDFW as “a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic regime, and where the width of its course can reasonably be identified by physical or biological indicators.” The historic hydrologic regime is defined as circa 1800 to the present (CDFW 2010).

2.2 REGIONAL WATER QUALITY CONTROL BOARD 401 CERTIFICATION/WASTE DISCHARGE REQUIREMENTS

The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the federal Clean Water Act (CWA) as well as the Porter Cologne Act (Water Code section 13260). The USG Expansion/Modernization Project is within the jurisdiction of the Colorado River Basin Regional Board. Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. The certification shall originate from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the navigable water at the point where the discharge originates or will originate. Any such discharges will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of the CWA. The Porter Cologne Act requires “any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the state to file a report of discharge. Discharge of fill material into “waters” of the State which does not fall under the jurisdiction of the United States Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act, may require authorization through application of waste discharge requirements or through waiver of Waste Discharge Requirements.

2.3 UNITED STATES ARMY CORPS OF ENGINEERS CLEAN WATER ACT 404 PERMIT

The United States Army Corps of Engineers (USACE) regulates "discharge of dredged or fill material" into wetlands and waters of the United States, which includes tidal waters, interstate waters, and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" (33 C.F.R. 328.3(a)), pursuant to provisions of Section 404 of the Clean Water Act.

The USACE requires that the 1987 Corps of Engineers Wetland Delineation Manual (Environmental Laboratories, 1987) be used for delineating wetlands and waters of the United States. To qualify for wetlands status; vegetation, soils, and hydrologic parameters must all be met. "Waters" of the U.S. are delineated based upon the "ordinary high water mark" (OHWM) as determined by erosion, the deposition of vegetation or debris, and changes in vegetation within rivers and streams and described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

For the purposes of this section, the term "fill" is defined as: material placed in waters of the United States where the material has the effect of:

- Replacing any portion of a water of the United States with dry land; or
- Changing the bottom elevation of any portion of a water of the United States.

Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

The definition of "discharge of dredged material" is defined as: any addition of dredged material into, including redeposit of dredged material other than incidental fallback within, the waters of the United States. The term includes, but is not limited to, the following:

- The addition of dredged material to a specified discharge site located in waters of the United States;
- The runoff or overflow, associated with a dredging operation, from a contained land or water disposal area; and
- Any addition, including redeposit other than incidental fallback, of dredged material, including excavated material, into waters of the United States which is incidental to any activity, including mechanized land clearing, ditching, channelization, or other excavation.

The term discharge of dredged material does not include the following:

- Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill). These discharges are subject to section 402 of the Clean Water Act even though the extraction and deposit of such material may require a permit from the Corps or applicable State.
- Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chain-sawing) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material.
- Incidental fallback.

3.0 PROJECT SETTING

3.1 VEGETATION COMMUNITY

Plaster City Quarry

The Plaster City Quarry is located in the arid Colorado Desert. The vicinity is characterized by sparse desert shrubland dominated by creosote bush (*Larrea tridentata*) with white bursage (*Ambrosia dumosa*), hollyleaf bursage (*Franseria ilicilolia*), brittlebush (*Encelia farinosa*), cheesebush (*Hymenoclea salsola*), pygmy cedar (*Peucephulum schottii*), catclaw acacia (*Acacia greggii*), indigo bush (*Psorothamnus schottii*), and smoketree (*Psorothamnus spinosus*); as well as several varieties of cactus such as barrel cactus (*Ferocactus acanthodes*), beavertail cactus (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and ocotillo (*Foquieria splendens*).

Undisturbed uplands on the site support desert shrubland of the creosote bush series, creosote bush – white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops have pygmy cedar and are almost devoid of vegetation.

The dominant drainage feature at the Plaster City Quarry is the alluvial wash in the valley formed by the Fish Creek Mountains. The alluvial wash is made up of a braided channel network and is generally covered by creosote bush, and creosote bush–white bursage series. In the braided channels, there is little or no ocotillo. Drainage channels had a higher occurrence of cheesebush and indigo bush than the upland areas. The larger braided channels also support catclaw acacia, smoketree, and desert lavender (*Hyptis emoryi*).

Other drainage features at the Plaster City Quarry consist of upland drainages located in the gypsum outcrops. These drainages are characterized by fast draining channels with vegetation that is similar to the surrounding upland areas. The dominant vegetation at the Gypsum outcrops is pygmy cedar. Plant species associated with the gypsum outcrops include white bursage, creosote bush, brittlebush, and cheesebush.

Plaster City Plant

The proposed 8.77 miles of replacement waterline which runs from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant, is located in the arid Colorado Desert. The vicinity is characterized by desert shrubland dominated by creosote bush with white bursage, hollyleaf bursage, brittlebush, cheesebush, pygmy cedar, catclaw acacia, indigo bush, and smoketree; as well as several varieties of cactus such as barrel cactus, beavertail cactus, silver cholla, and ocotillo. Some areas of the waterline replacement area have been disturbed by activities associated with road maintenance and recreational OHV use. Dominant vegetation in the area is four-wing saltbush (*Atriplex canescens*), cattle spinach (*Atriplex polycarpa*), big sagebrush (*Atriplex lentiformis*) and cheesebush.

3.2 HYDROLOGY

Plaster City Quarry

The Colorado Desert has a typical arid desert climate with low rainfall and extreme temperature ranges. Average annual rainfall in El Centro is approximately three inches. At the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year.[1] Most of the rain falls in December through March but August and September can experience severe thunderstorms associated with monsoon conditions bringing moisture from the Gulf of California. During these episodes, it is not uncommon for thunderstorms to drop several inches of rain in just a few hours, causing severe flash flooding, washing out roads, scouring washes and uprooting vegetation. Average rainfall for the Plaster City Quarry and Fish Creek Wash is approximately three inches per year.

The USG Plaster City Quarry is identified by the National Hydrography Dataset to be located in HUC12-181002030602. The sub-watershed is 35.314 square miles. Rain waters flow from the Fish Creek Mountains located to the east and south and from the Split Mountain located to the west. Flows move in a north, northeasterly direction forming Fish Creek Wash. The flows eventually enter the Salton Sea located 18 miles northeast of the Plaster City Quarry.

The Plaster City Quarry is located in the Colorado River Basin Plan, the Anza Borrego and Imperial hydrologic units, and the Ocotillo Lower Felipe, Brawley, Coyote Wells hydrologic areas (Figure 5).

Plaster City Plant

The USG Plaster City Plant is identified by the National Hydrography Dataset to be located in HUC12-181002041004 and HUC12-181002041008. The Plaster City Plant is located within the Anza Borrego and Imperial hydrologic units (Figure 5). Hydrologic flows travel east through Coyote Wash and northeast through the New River. The flows eventually enter the Salton Sea located approximately 22 miles northeast of the Plaster City Plant.

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[1] Schoenherr, Allen A, *A Natural History of California*, University of California Press, 1992.

3.3 SOILS

Plaster City Quarry

Soils at the Plaster City Quarry and in the vicinity consist predominantly of beds of gypsum dated from the Miocene age. The gypsum beds are part of a conformable sequence consisting of Miocene non-marine Split Mountain Formation, Fish Creek Gypsum, and Pliocene Marine Imperial Formation. The gypsum beds in the Plaster City Quarry area are 100–200 feet thick, and are exposed continuously on the surface for a distance of about 2.5 miles. Structurally, they form the northeast limb of a northwest trending syncline, the axis of which lies in the broad valley to the west. The general strike of the gypsum beds is north 10–20 degrees west and dip 25-35 degrees southwest. Locally, the beds are warped into minor folds. The material is a light buff-gray, fine to medium-grained compact, equi-granular rock composed almost entirely of gypsum. Minor amounts of anhydrite are present in some parts of the deposit mainly as thin beds and lenses. Very minor shreds of biotite occur disseminated in the beds along with a finely divided opaque material, which is probably iron and manganese oxides.

The following descriptions of the geologic units in the Plaster City Quarry area and vicinity are summarized from the Draft Environmental Impact Report/Environmental Impact Statement for the USG Plaster City Expansion/Modernization Project (Resource Design 2006).

Granitic Bedrock (Kgr)

Granitic bedrock of tonalite composition is exposed along the eastern side of the mapped area. The tonalite is coarse-grained and dark gray to black, with minor felsic dikes and sills. Foliation is moderately developed, with no preferred orientation observed. In many places, the rock grades to granitic gneiss. Natural slopes include some rounded boulders. These rocks are Cretaceous and older.

Split Mountain Conglomerate (Tsm)

This unit consists primarily of massive, well-consolidated conglomerate with subrounded clasts up to approximately 10 feet in maximum dimension. Clast types are largely tonalite in the mapped area. Weathered exposures are dark reddish brown and contrast with the dark gray color of fresh exposures. This unit rests on the tonalite and is a basal conglomerate derived from it. In the Split Mountain Gorge area to the west, the conglomerate is overlain by a lens of rock slide megabreccia, but the megabreccia is not present in the mapped area. In the mapped area, the uppermost portion of the Split Mountain Conglomerate consists of fine-grained sandstone with minor shale. The fine-grained beds grade upward into the Fish Creek Gypsum. The thickness of the Split Mountain Conglomerate decreases from at least 600 feet in the northern part of the mapped area to less than approximately 100 feet in the southern portion.

Fish Creek Gypsum (Tfc)

The Fish Creek Gypsum is up to 200 feet thick and averages about 125 feet in thickness in the mapped area. The gypsum is generally greater than 95 percent pure, with minor impurities consisting of clays, carbonate and detrital minerals. The color is variable, but is generally light gray to white, with patches of red and black. The gypsum is an evaporite deposit, formed in a shallow marine environment in Miocene time. As exposed in outcrop and in Plaster City Quarry faces, the gypsum is generally very dense, hard and massive. Blasting is required for efficient excavation. Where thinly bedded exposures are present, the bedding is often highly contorted on a small scale, similar to other evaporite deposits. The deformation is attributed to plastic flow due to gravity and volumetric expansion associated with the change from anhydrite to gypsum. However, the deformation is internal to the gypsum bed. The underlying clastic material does not display similar deformation.

Older Alluvium (Qoa)

The broad wash that traverses the mapped area includes a number of relatively stable and elevated erosion surfaces (geomorphic surfaces), particularly in the southern third of the site. The stability of these surfaces is evidenced by various factors including the degree of soil development, the presence of desert pavements and the local topography. The desert pavements are identified by the concentration of surficial clasts and the presence of varnish on the top sides of clasts and rubification (reddening) on the bottom sides. Bar and swale topography is present in these areas, suggesting a long period of gradual dissection. Where exposed in the sides of active drainages, these soils exhibit strong carbonate and gypsum cementation in their upper horizons. All of these factors indicate a long period of subaerial exposure, probably at least 20,000 years and up to approximately 200,000 years. As such, the stable, uplifted surfaces were mapped as older alluvium of late Pleistocene age. Many surfaces of varying ages are present, but all were mapped as older alluvium.

The older alluvium consists of gray to brown, gravelly sands with silt, cobbles and boulders. Clasts are largely subangular tonalite, but metamorphic and gypsum rock clasts are present.

Observation of steep side slopes in incised drainages in the southern third of the site indicates that the older alluvium is only a thin veneer above a relatively planar erosion surface developed on the Fish Creek Gypsum.

Younger Alluvium (Qya)

Active washes incise all of the other units in the mapped area. The active washes merge in the northern portion of the mapped area, becoming a single broad wash several hundred feet wide. The wash deposits are generally coarse sands with cobbles in the southern portion of the site, grading to silty fine sands in the northern portion of the site. Clasts are largely subangular to subrounded tonalite, but metamorphic and gypsum rock clasts are present. No soil development was observed and these materials are entirely unconsolidated.

No hydric soils are present.

Plaster City Plant

Approximately 98.5 percent of the soils at the Plaster City Plant and the vicinity are not mapped. The remaining 1.5 percent of the soils that are mapped consists of Indio-Vint complex and Rositas silt loam. These mapped soils are located within the eastern portion of the Plaster City Plant (Appendix B). The following descriptions of the soils located within the Plaster City Plant area and vicinity are summarized from the U.S. Department of Agriculture Soil Conservation Service Soil Survey of Imperial County, California, Imperial Valley Area (1981).

Indio-Vint Complex (119)

These soils are found on flood plains and alluvial basin floors at elevations of 200 feet above sea level to 230 feet below. This unit averages about 35 percent Indio loam and 30 percent Vint loamy fine sand. The remaining 35 percent is Rositas, Meloland, and Holtville soils; soils that are highly stratified with sand to silt loam textures; narrow areas with slopes of 2 to 5 percent; and areas that have hummocky or dune topography.

The Indio soil is very deep and well drained. It formed in alluvial and eolian sediments of mixed origin. Some areas are saline. Permeability of the Indio soil is moderate, and available water capacity is high to very high. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is moderate. The effective rooting depth is 60 inches or more.

The Vint soil is very deep and well drained. It formed in alluvial and eolian sediments from diverse sources. Permeability of the Vint soil is moderately rapid, and available water capacity is moderate. Surface runoff is slow, and the hazard of erosion is slight. The hazard of soil blowing is high. The effective rooting depth is 60 inches or more.

Rositas Silt Loam (137)

This very deep, somewhat excessively drained, nearly level soil is on flood plains, basins, and terracesat elevations of 35 to 300 feet. Included with this soil in mapping are areas of Vint and Meloland soils and scattered coppice dunes of Rositas fine sand. Permeability is rapid, and available water capacity is low. Surface runoff is slow, and the hazard of water erosion is slight. There is a moderate hazard of soil blowing and abrasion to young plants. The effective rooting depth is 60 inches or more.

4.0 METHODOLOGY

Prior to the site visit, project plans, topographic maps, and satellite imaging were examined to establish an accurate project location, project description, watershed, soils, and surrounding land uses. The project location was reviewed and studied for information that would aid in determining the potential for wetlands, perennial, intermittent, or episodic drainages, and associated riparian vegetation. Current and historic aerial imagery of the project area were reviewed for signs of stream activity. Changes in landscape, color, vegetation density, and drainage pattern were noted. Anthropogenic disturbances within the project area were also identified.

Potential watercourses and related landform boundaries, such as changes in landscape color, vegetation densities, and drainage patterns, were then outlined on aerial photography. Transects were then selected for field verification of stream presence indicators. Reference points along each transect were recorded on a hand-held Global Positioning System (GPS) for field reference.

Field surveys of the proposed project areas were conducted on April 19, 2016 through April 21, 2016. The jurisdictional delineation survey area included all of USG holdings at the Plaster City Quarry, a 150-foot wide alignment north of the Quarry tram railroad for the proposed waterline/powerline form the Quarry to Quarry Well No. 3, and the alignment between the existing Evan Hewes Highway and old Evan Hewes Highway where replacement of the waterline from Ocotillo to the Plaster City Plant is proposed.

During the field survey, the selected transects were walked a minimum of 100 feet upstream and downstream, noting the presence or absence of fluvial activity, boundaries of geomorphic units, changes in plant species composition between different geomorphic units, photographing points of transition, and mapping the watercourse and watercourse boundaries. The guidelines followed are those established in the 2014 *Mapping Episodic Stream Activity (MESA) Field Guide*. Areas measured were also recorded using a hand-held GPS for accurate location reference.

Furthermore, the presence of an ordinary high water mark was recorded. Where the presence of an OHWM was evident, a second measurement was taken for the width of the OHWM and recorded. The OHWM was determined based upon erosion, the deposition of vegetation or debris, and changes in vegetation, as described in *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (August 2008).

Where changes in plant community composition were apparent, the area was examined for the possibility of wetlands. Whether or not adjacent to WUS, the potential wetland area is evaluated for the presence of the three wetland indicators: hydrology, hydric soils and hydrophytic vegetation. The guidelines followed are those established in the 1987 *Army Corps of Engineers Manual.*

Jurisdictional drainages and wetlands were evaluated for impacts associated with all aspects of the proposed project. The mine development plan and mine development information obtained from the USG administrative staff was referenced to delineate and quantify the area to be impacted by the proposed Plaster City Quarry. The expansion footprint, vegetation, wildlife, hydrology, and water quality impacts were all calculated and recorded. The jurisdictional drainages and wetlands were also evaluated for their connectivity to “navigable waters” as described in “The Clean Water Act”. The field assessments for the waterline/powerline north of the quarry and the waterline at the Plaster City Plant followed similar procedures.

5.0 RESULTS

5.1 RESULTS OF THE JURISDICTIONAL DELINEATION

A total of 327.55 acres of jurisdictional drainages were identified to occur within the proposed Plaster City Quarry Expansion/Modernization Project boundaries (Figures 6 and 7, 1 through 8). No significant amount of riparian vegetation was observed to occur on the drainages; therefore, the same jurisdictional areas were identified for the CDFW, USACE, and RWQCB.

5.2 EXISTING RESOURCES ASSOCIATED WITH DRAINAGES

Jurisdictional drainages that are unnamed drainages are identified on the figures and discussed below as they occur within each of the proposed project areas: Plaster City Quarry, the Plaster

City Quarry proposed water/power supply alignment, and the Plaster City Plant water supply line replacement area.

5.2.1 Plaster City Quarry

A total of 325.79 acres of unnamed streambeds occur in the Plaster City Quarry area (Figure 6). The drainages exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in these drainages include: smoke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the Plaster City Quarry area.

5.2.2 Plaster City Quarry Water Supply

A total of 0.21 acre of unnamed streambeds were identified in the portion of the survey area corresponding the alignment for a proposed waterline/powerline extending from the Quarry to Quarry Well No. 3 (APN 033-020-09). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the waterline/powerline survey area.

5.2.3 Plaster City Plant Water Supply

A total of 1.55 acres of unnamed streambeds were identified in the survey area corresponding to the Plaster City Plant waterline replacement (Figures 7, 1 through 8). The streambeds in this survey area exhibit a bed, bank and channel, and appear to convey water only during intense storm events. The streambeds are all characterized as ephemeral with little or no vegetation. Sparse vegetation found in the drainages include: **s**moke tree *(Psorothamnus spinosus),* white bursage *(Ambrosia dumosa),* catclaw acacia, *(Acacia greggii)* brittlebush *(Encelia farinose),* ocotillo *(Foquieria splendens),* and Schott's indigo bush (*Psorothamnus schotti).*

No wetland habitat was identified to occur in the water supply line replacement survey area.

5.3 AGENCY JURISDICTION

5.3.1 California Department of Fish and Wildlife

Under the Lake and Streambed Alteration Program, the California Department of Fish and Wildlife has jurisdiction over portions of the site identified as stream or lake as defined by the presence of a bed, bank or channel and where riparian vegetation was present on a bank to the outside drip-line of the vegetation. The California Department of Fish and Wildlife would assert jurisdiction over all 327.55 acres of onsite streambeds located within the proposed Plaster City Quarry Expansion/Modernization Project boundaries. These streambeds would fall under the jurisdiction of California Fish and Game Code Section 1602. Any impacts to these drainages would require notification to the Department of Fish and Wildlife for review under the Streambed Alteration Agreement Program.

5.3.2 Regional Water Quality Control Board

Section 401 of the CWA specifies that certification from the State is required for any project requesting a federal license or permit to conduct any activities including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. Impacts to any of the 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries will require a 404 permit from the USACE; therefore, a 401 Certification from the Colorado River RWQCB will be needed upon issuance of a 404 permit.

5.3.3 Army Corps of Engineers

The USACE regulates discharge of dredged or fill material into wetlands and "waters of the United States", which includes "tidal waters", "interstate waters", and "all other waters, interstate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce or which are tributaries to waters subject to the ebb and flow of the tide" pursuant to provisions of Section 404 of the Clean Water Act.

The 327.55 acres of streams located within the proposed Plaster City Expansion/Modernization Project boundaries consist of a series of unnamed desert ephemeral streambeds that flow only during severe rain events. These streambeds have a definable "ordinary high water mark" distinguishable by erosional and sedimentary characteristics. These drainages ultimately flow into the Salton Sea. The Salton Sea is a traditional navigable water as defined by the Clean Water Act. Therefore, drainages located within the proposed Plaster City Expansion/Modernization Project boundaries have a significant nexus to "traditional navigable water" and a 404 Clean Water Act permit from the USACE would be required for any fill associated with the within the proposed Plaster City Expansion/Modernization Project.

5.4 PROJECT IMPACTS TO JURISDICTIONAL AREAS

5.4.1 Impacts to Jurisdictional Drainages

Plaster City Quarry

The proposed Project will permanently impact portions of jurisdictional streambeds located within the Quarry area of development as shown in the Mine Plan. Impacts to these drainages are considered permanent because restoration activities are not anticipated to occur until reclamation of the Quarry is undertaken. Furthermore, the reclamation plan does not specifically address restoration of streams.

Ephemeral streambeds and washes located within the Quarry will be excavated and filled as the Quarry expands to access new deposits of gypsum. Proposed operations within this area will utilize heavy machinery and explosives to excavate the new phases of the Quarry as outlined in Table 1 above and described in the Mine Reclamation Plan (Lilburn 2003). Alluvial wash quarrying will involve the construction of a berm beginning at the southernmost limit of the disturbance area. The expansion of quarrying activities within the Quarry is anticipated to result in approximately 134.08 acres (107,458 linear feet) of permanent impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Appendix A).

Plaster City Quarry Water Supply

Installation of new well and approximate 20,719 lineal feet of water supply pipeline and power supply lines will result in the filling of all ephemeral streambeds and washes within the waterline/powerline area. Ephemeral streambeds and washes located within the waterline/powerline area will be excavated and filled as a result of the proposed waterline/powerline installation activities. The proposed waterline/powerline installation activities are anticipated to result in approximately 0.21 acres of impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8).

Plaster City Plant Water Supply

As described in the BLM application CACA-044014 the proposed replacement waterline would be installed within a 75-foot wide right-of-way south of the Evan Hewes Highway centerline. The replacement pipeline would be installed approximately 50 feet south of the Evan Hewes Highway centerline. The existing pipeline would be abandoned in place.

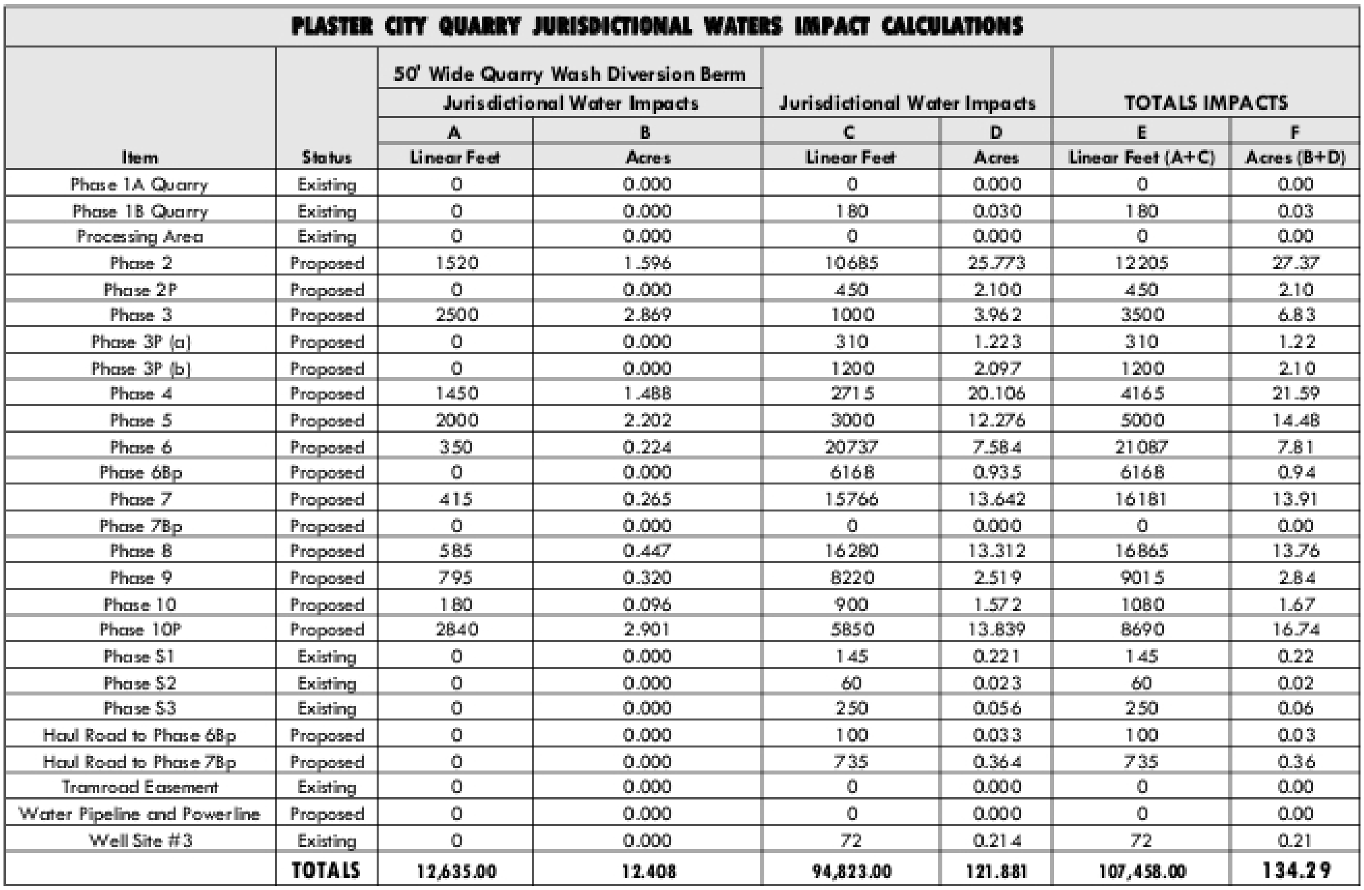
USG would require access for equipment along the entire length of the pipeline, approximately 8.77 miles from the USG groundwater storage tank in the community of Ocotillo east to the Plaster City Plant. Construction equipment would include but not be limited to service trucks, tractors, backhoes, graders for excavation of a trench and installation of the replacement pipeline. Installation of the pipeline would include excavation of a trench, placement of the new pipeline, and fill/compaction, or material to pre-project conditions. The proposed final depth of the pipeline ranges from two (2) to six (6) feet below ground surface.

The proposed water pipeline replacement activities will result in the filling of all ephemeral streambeds and washes within the water supply line replacement area. Ephemeral streambeds and washes located within the water supply line replacement area will be excavated and filled as a result of the proposed water supply pipeline replacement activities. The proposed water supply pipeline replacement activities are anticipated to result in approximately 1.55 acres of temporary impacts to CDFW, USACE, and RWQCB jurisdictional drainages (Figures 7, 1 through 8). All waterline construction areas will be restored to pre-project conditions following the completion of construction activities.

Overall Project Impacts

Implementation of the proposed project would impact a total of 135.84 acres of CDFW, USACE, and RWQCB jurisdictional streambeds. Full build-out of the Quarry would result in permanent impacts to approximately 134.29 acres of jurisdictional drainages. Activities associated with the Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. The impacts to jurisdictional drainages for each project area is outlined in Tables 2 and 3 below.

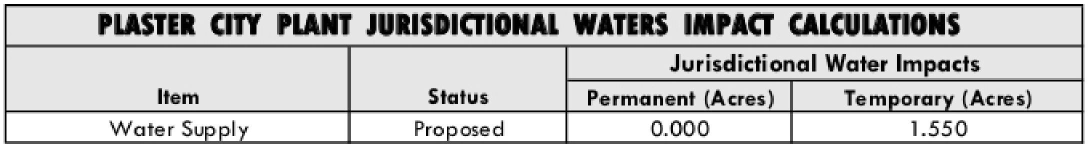
Table 2.



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

		50' Wide Quarry Wash Diversion Berm					
		Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
Item	Status	Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

Table 3.



PLASTER CITY PLANT JURISDICTIONAL WATERS IMPACT CALCULATIONS

		Jurisdictional Water Impacts	
Item	Status	Permanent (Acres)	Temporary (Acres)
Water Supply	Proposed	0.000	1.550

5.4.2 Project Impacts to Wetlands

No wetlands were identified or recorded within the project survey area. The project will not impact wetlands.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 PERMITS

6.1.1 Streambed Alteration Agreement Notification

The proposed project will result in approximately 134.29 acres of permanent impacts and streambeds within the jurisdiction of the CDFW. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to submit a notification for a 1602 Streambed Alteration Agreement to the California Department of Fish and Wildlife for impacts to jurisdictional streambeds prior to commencing activities associated with the proposed project.

6.1.2 Regional Water Quality Control Board

In 2014 the Colorado River Basin Regional Water Quality Control Board issued an Order for a Technically-Conditioned Clean Water Act Section 401 Water Quality Certification. This 401 Certification covers an approximately 111-acre area consisting of Quarry Phases 2 and 2P and an approximately 25-acre area at the Shoveler Quarry.

The proposed project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the Colorado River Water Quality Control Board. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 401 Certification for impacts to Waters of the U.S. from the Colorado River RWQCB for project activities not covered under the existing 401 Water Quality Certification prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.1.3 United States Army Corps of Engineers

The proposed Plaster City Expansion/Modernization Project will result in permanent impacts to approximately 134.29 acres of streambeds within the jurisdiction of the USACE. In addition, the activities associated with the Plaster City Plant water supply would result in temporary impacts to approximately 1.55 acres of jurisdictional drainages associated with replacement of an existing water pipeline. USG will be required to obtain a 404 Permit from the USACE for impacts to Waters of the U.S. prior to commencing the proposed Plaster City Expansion/Modernization Project activities.

6.2 AVOIDANCE AND MINIMIZATION RECOMMENDATIONS

To minimize impacts associated with the proposed Plaster City Expansion/Modernization Project on resources associated with the drainages, the following avoidance and minimization measures are recommended:

Wildlife

- USG shall instruct employees and other visitors at the mine to avoid Peninsular Bighorn Sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project proponent has established a training program, including new-employee orientation and annual refreshers, to educate employees/visitors regarding bighorn sheep and the importance of avoidance. A Section 7 consultation was initiated by BLM with USFWS in 2008 to determine potential impacts to Peninsular Bighorn Sheep and determine recommended methods of avoidance. To date USFWS has not rendered an opinion.
- The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the mine manager. Upon receiving any such reports, the mine manager shall contact the appropriate authorities for removal of domestic animals.
- In project areas where nesting birds may occur, the applicant: 1) shall avoid removing potential nesting riparian vegetation from March 15 through September 15, or 2) shall survey all potential nesting riparian vegetation within the project site for active bird nests. If an active bird nest is located, the nest site shall be flagged or staked a minimum of 5 yards in all directions, the flagged zone shall not be disturbed until the nest becomes inactive.

Habitat/Vegetation

- When appropriate, mitigation for the removal of vegetation associated with the drainage shall include re-vegetation of suitable areas with desirable vegetation native to the area.
- Work areas within jurisdictional drainages shall be delineated with flagging or other means of marking prior to ground disturbance to assure work activities and impacts do not exceed permitted limits.
- All areas of disturbed soils with slopes towards a wash shall be stabilized to reduce erosion potential. Where possible, stabilization shall include the re-vegetation of stripped or exposed areas with vegetation native to the area. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials may be used for such stabilization.

Best Management Practices

- Structures and associated materials, including debris, not designed to withstand high seasonal flows shall be relocated to areas above the high water mark before such flows occur.
- All debris, bark, slash, sawdust, rubbish, silt, cement or concrete or washings thereof, asphalt, paint or other coating materials, oil or other petroleum products, or any other substance resulting from project-related activities which would be hazardous to aquatic life or jurisdictional waters, shall be prevented from contaminating the soil and/or

entering the waters of the state. None of these materials shall be allowed to enter into or be placed within or where they may be washed by rainfall or runoff into jurisdictional waters. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any stream.

- Any project-disturbed portions of drainages not permanently impacted by this project will be restored to as near pre-project conditions as possible.
- Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This will include the work site to be isolated and/or the construction of silt catchment basins, so the silt or other deleterious materials are not allowed to pass to the downstream reaches.
- Spoil sites shall not be located within a wash, where spoil can be washed back into a stream, or where it will cover aquatic or riparian vegetation. The applicant will remove all human-generated debris.

7.0 REFERENCES CITED

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Project Specific References

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FIGURES

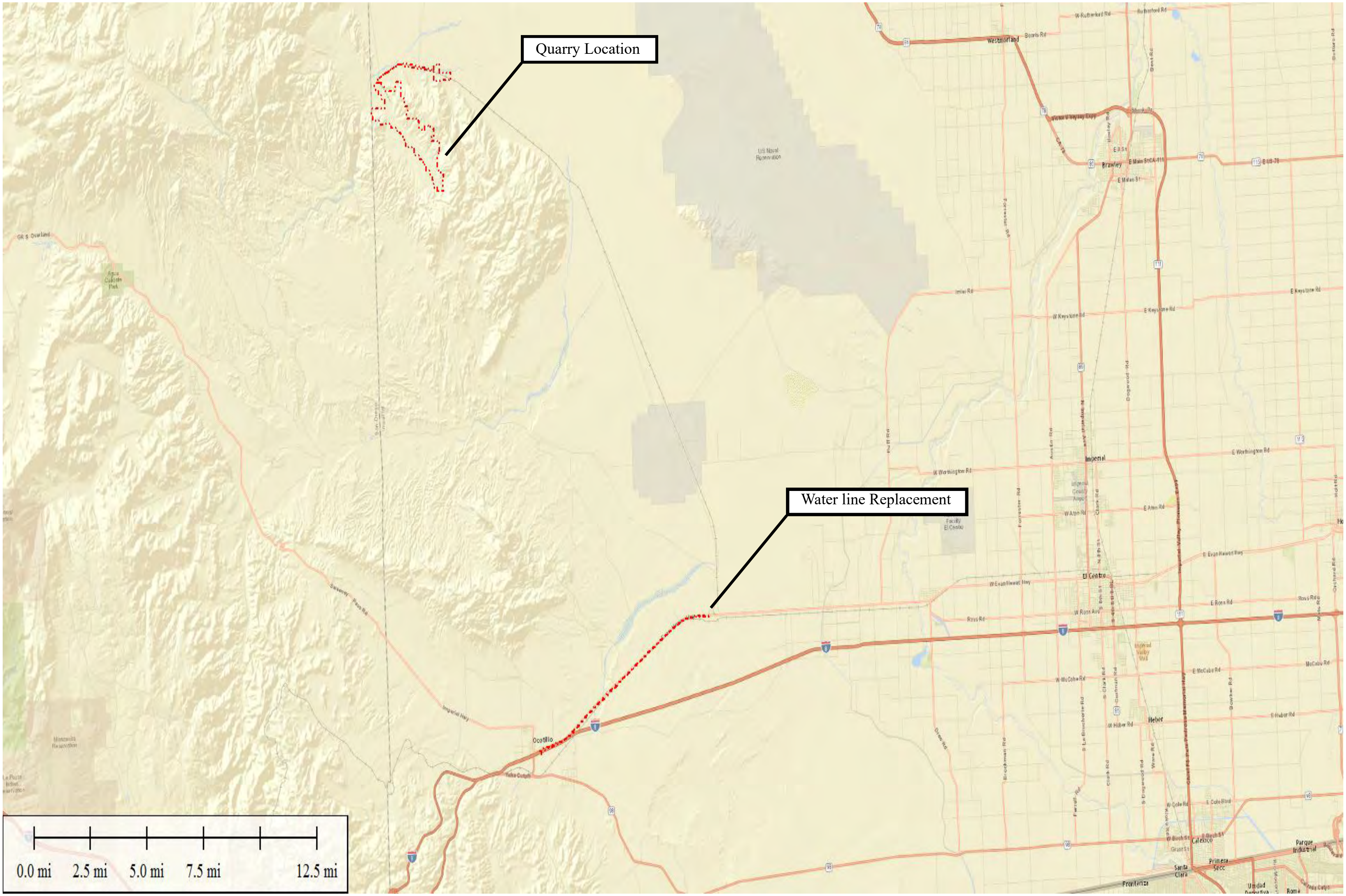

Figure 1
Vicinity Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

▭ Project Locations

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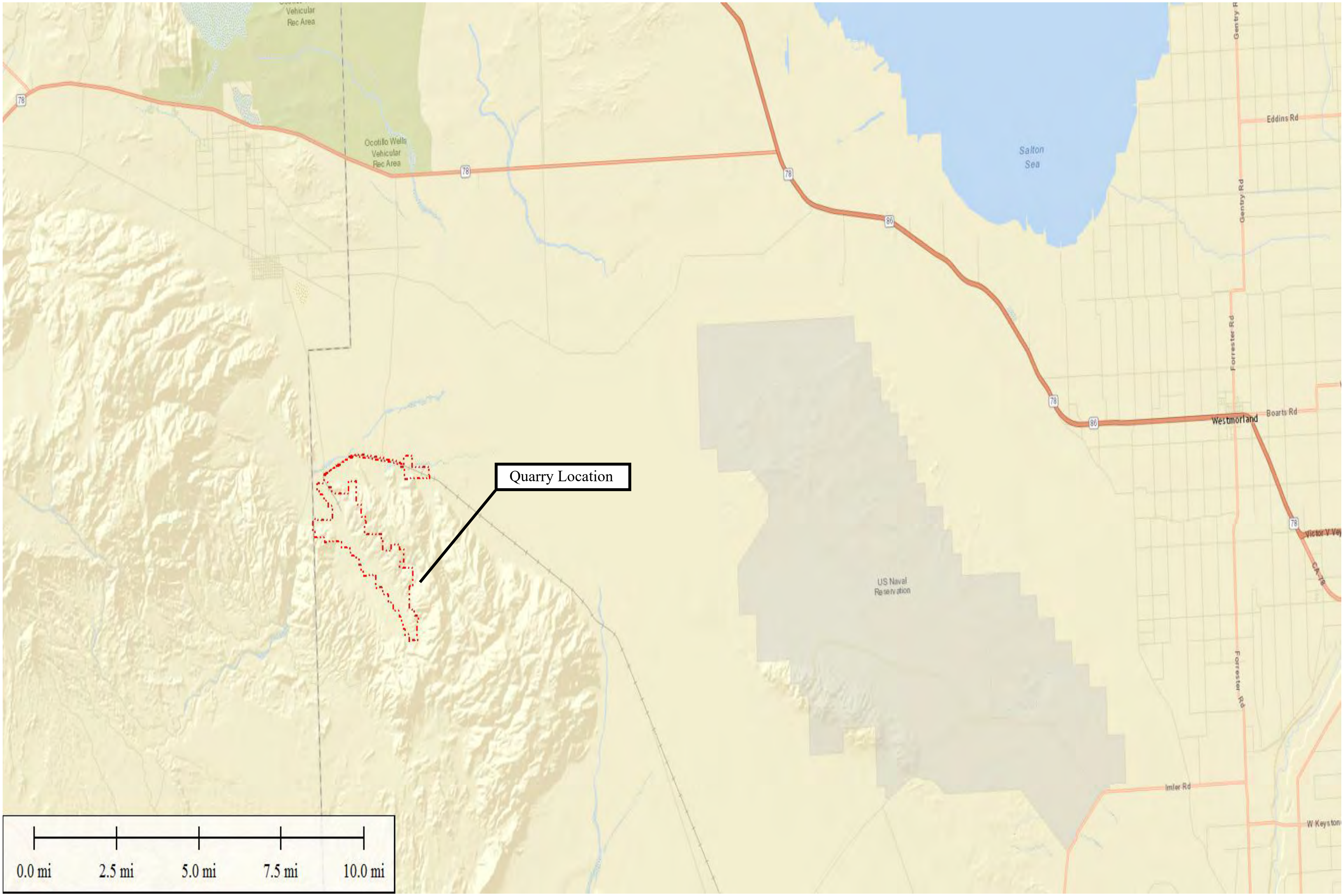

Figure 2

Quarry Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

▭ Plaster City Quarry Location

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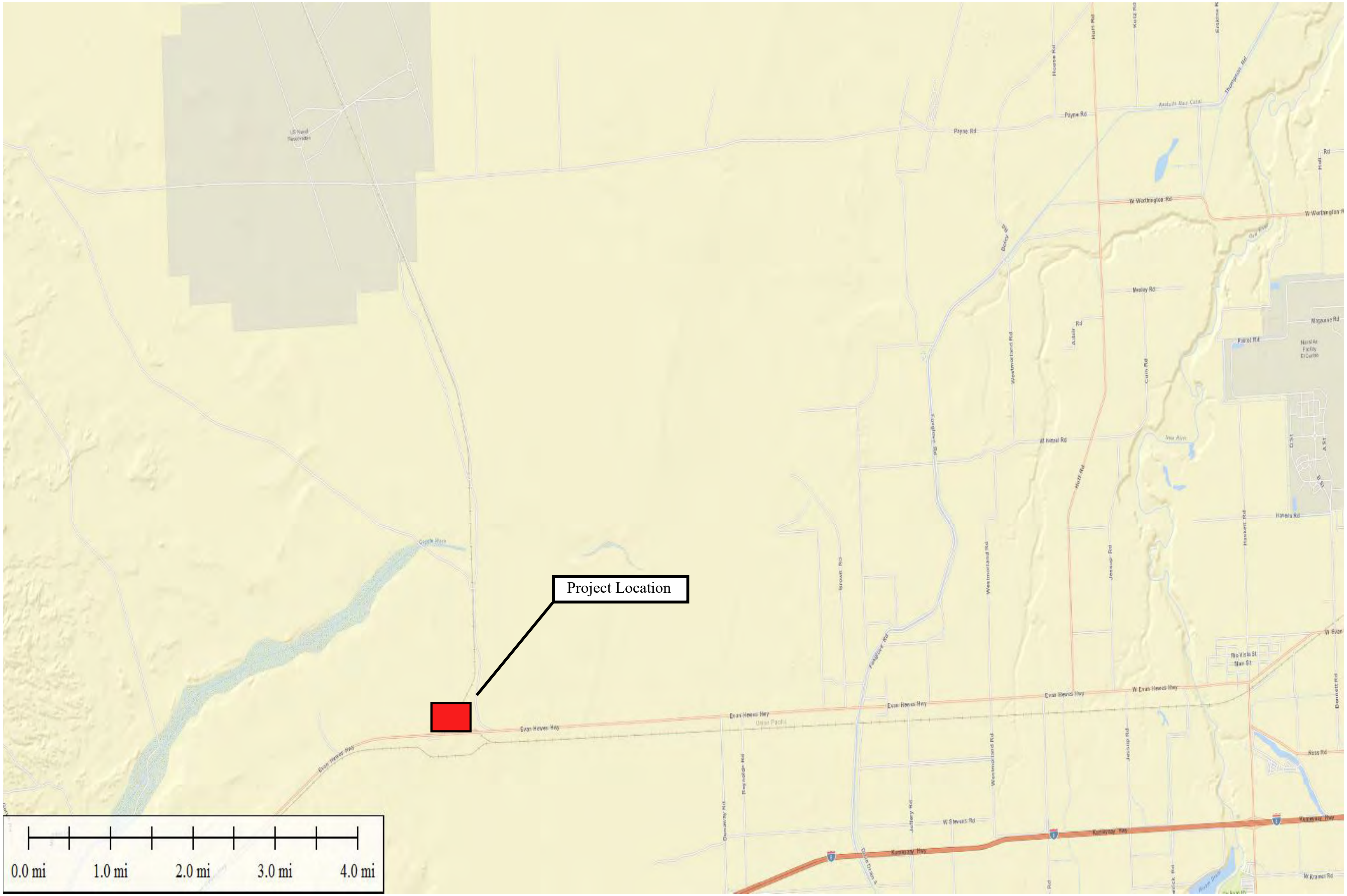

Figure 3

Plaster City Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

🟥 Plaster City Plant Location

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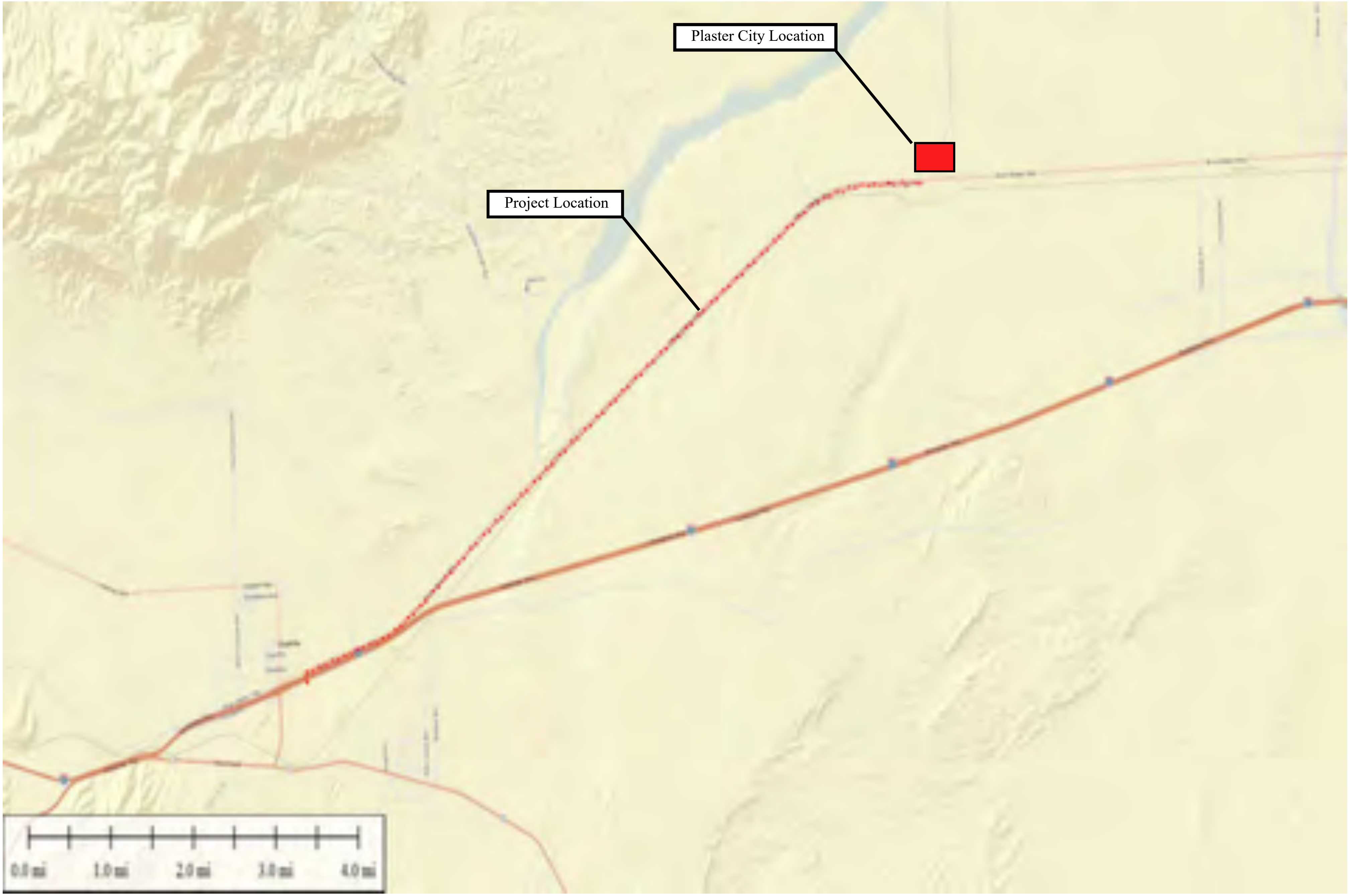

Figure 4

Water Line Replacement Location Map
USG Plaster City Mine Quarry
Expansion/Modernization Project

Imperial County, CA

Legend

🟥 Plaster City Plant Location

┅ Water Line Replacement Location

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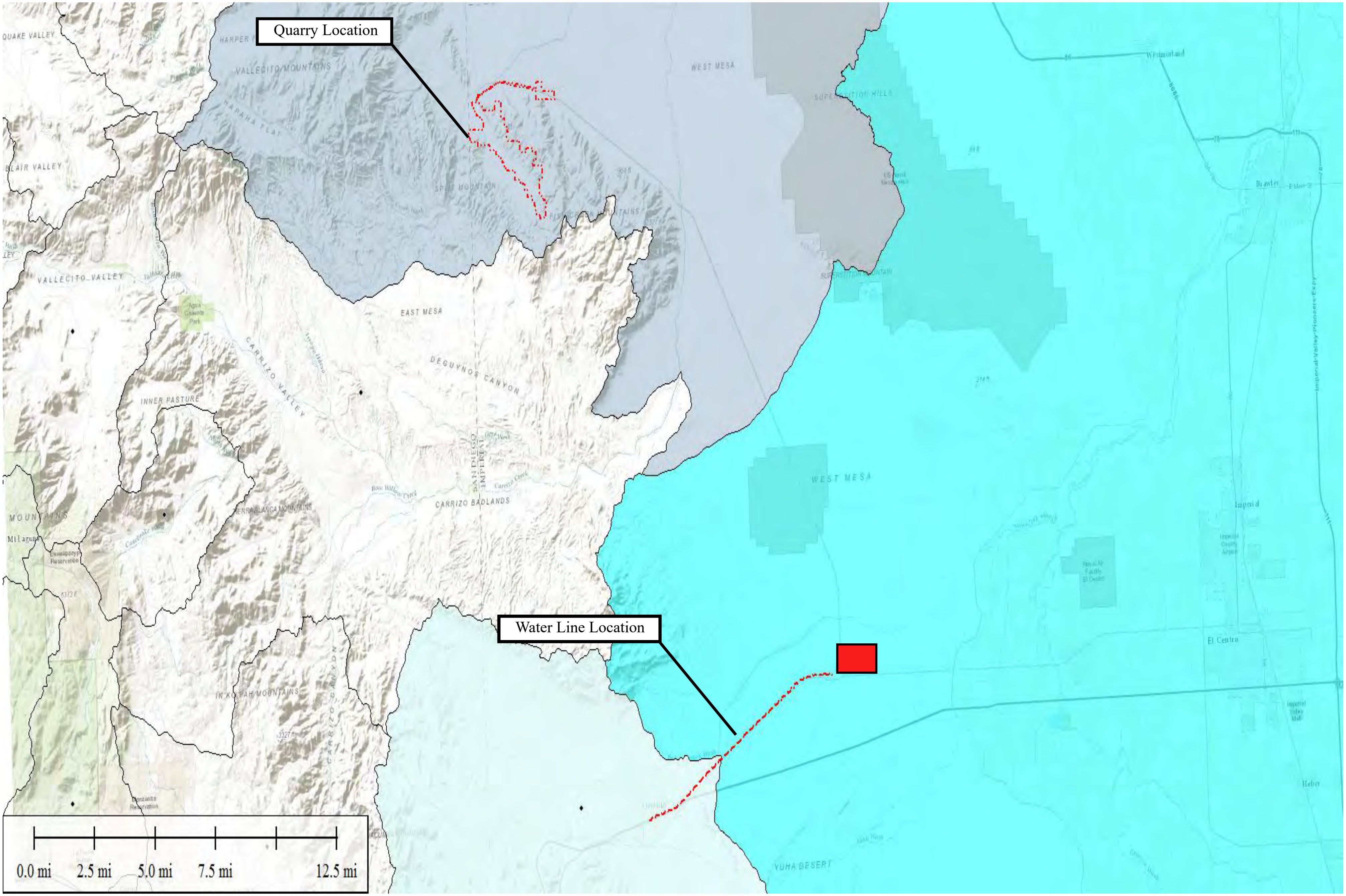

Legend

🟥	Plaster City Plant Location	▭	Imperial Hydrologic Unit Coyote Wells
┈┈	Plaster City QuarryLocation	▭	Imperial Hydrologic Unit Brawley
- - -	Water Line Replacement Location	▭	Anza Borrego Hydrologic Unit

Figure 5

Hydrologic Unit Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

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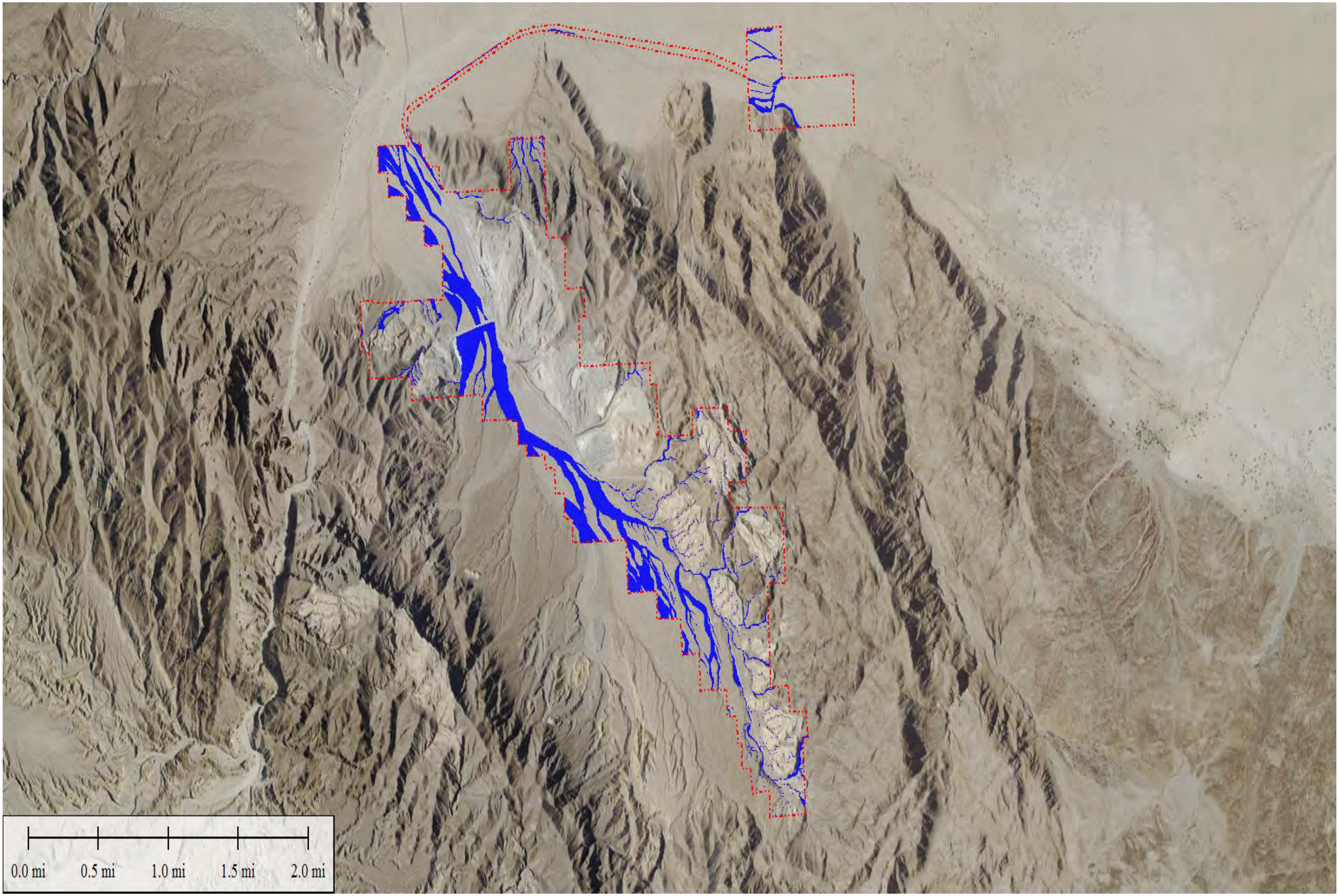

Figure 6

Plaster City Mine Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

▭ Plaster City Quarry Location

🟦 326 Acres State and Federal Jurisdictional Streams

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Figure 7 (1 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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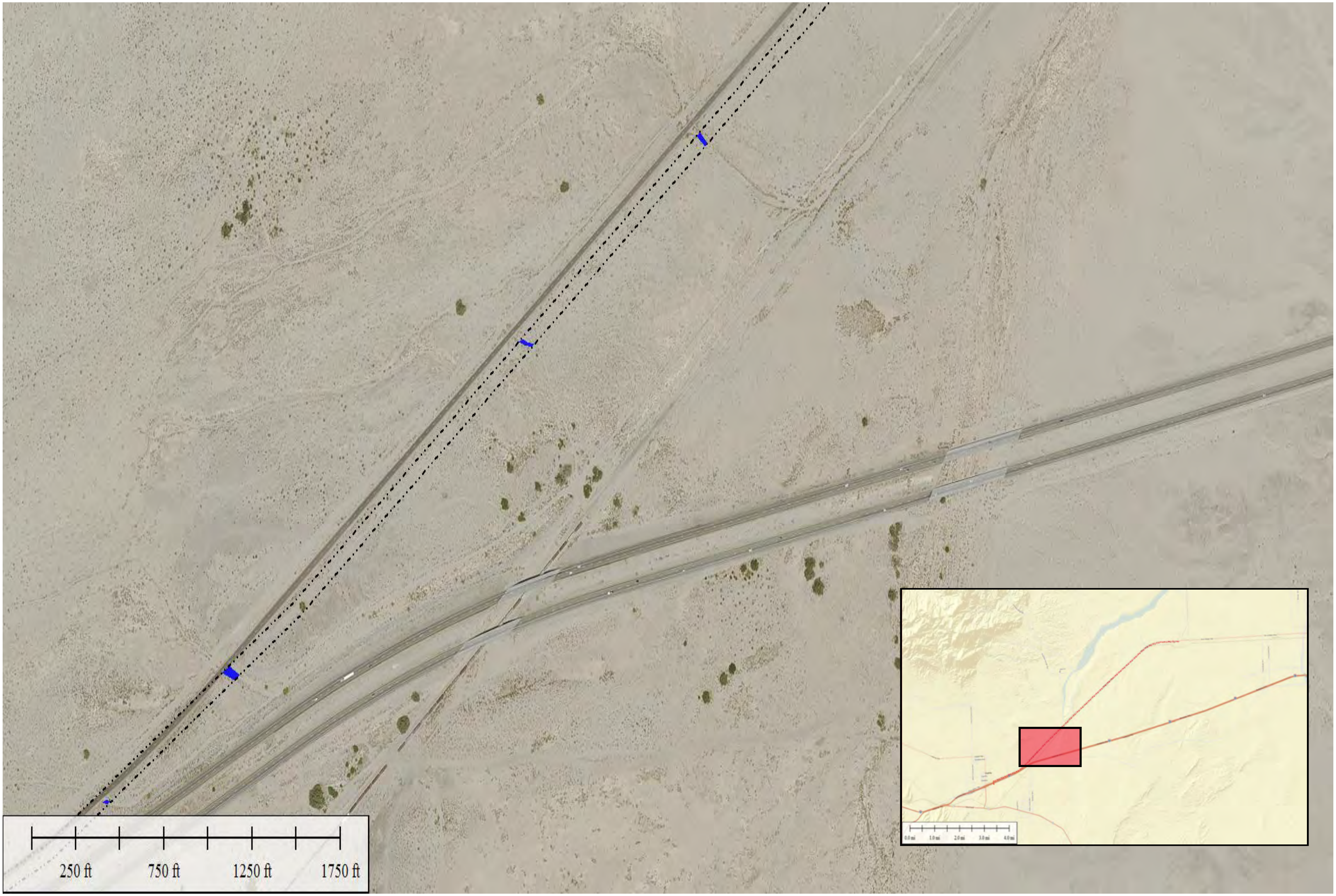

Figure 7 (2 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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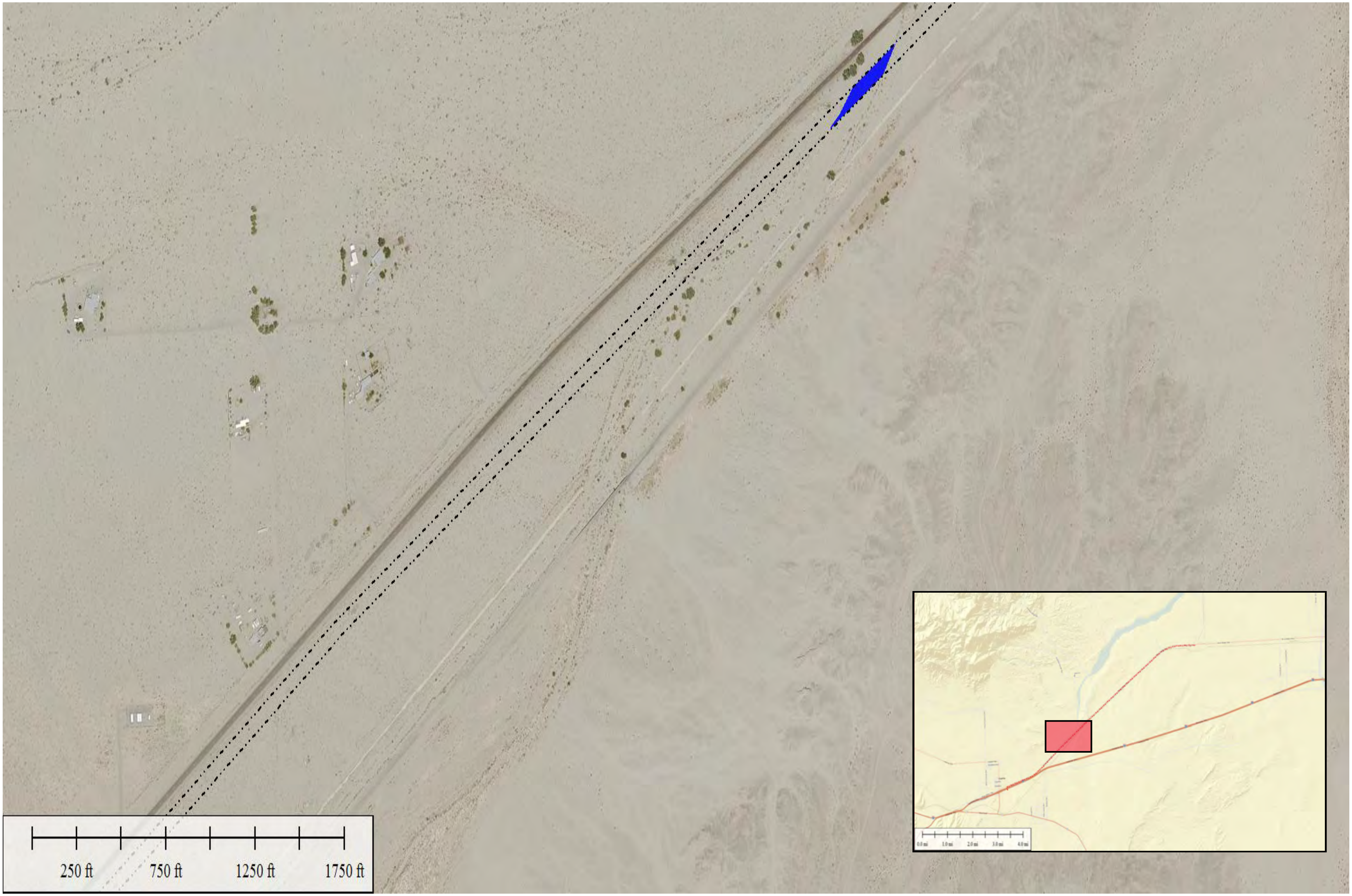

Figure 7 (3 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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Services

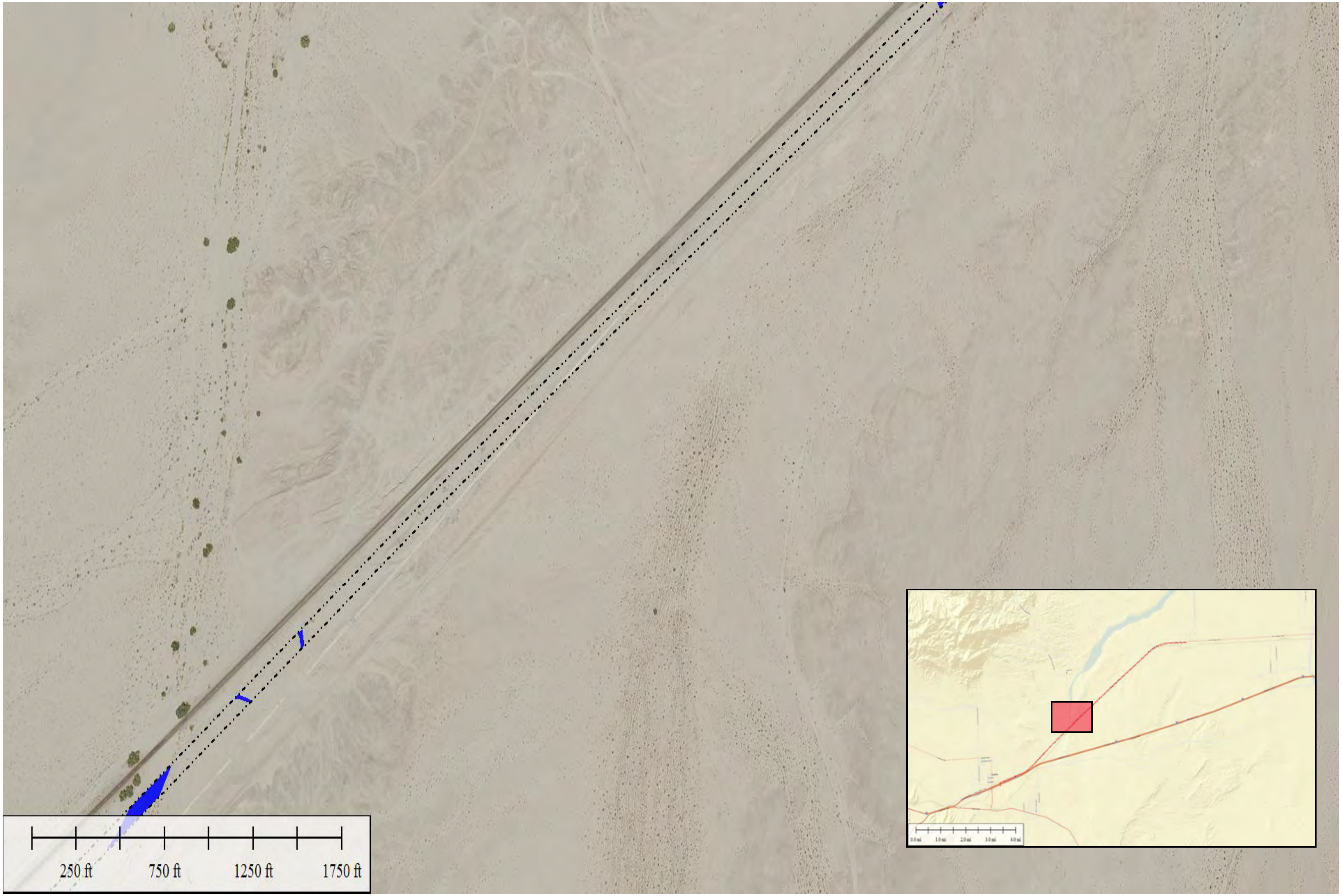

Figure 7 (4 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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Hernandez
Environmental
Services

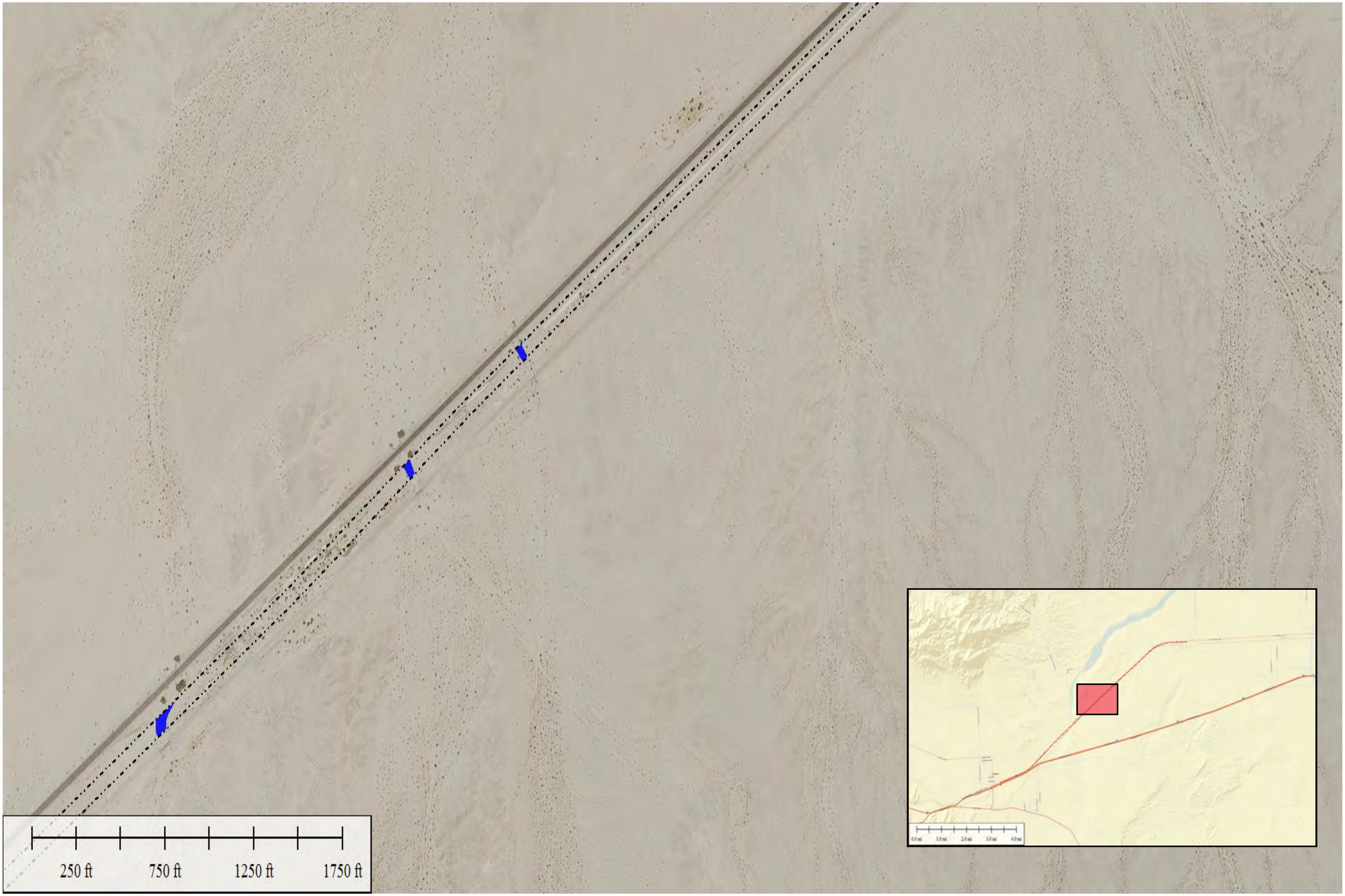

Figure 7 (5 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
▬	1.55 Acres State and Federal Jurisdictional Streams

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Hernandez
Environmental
Services

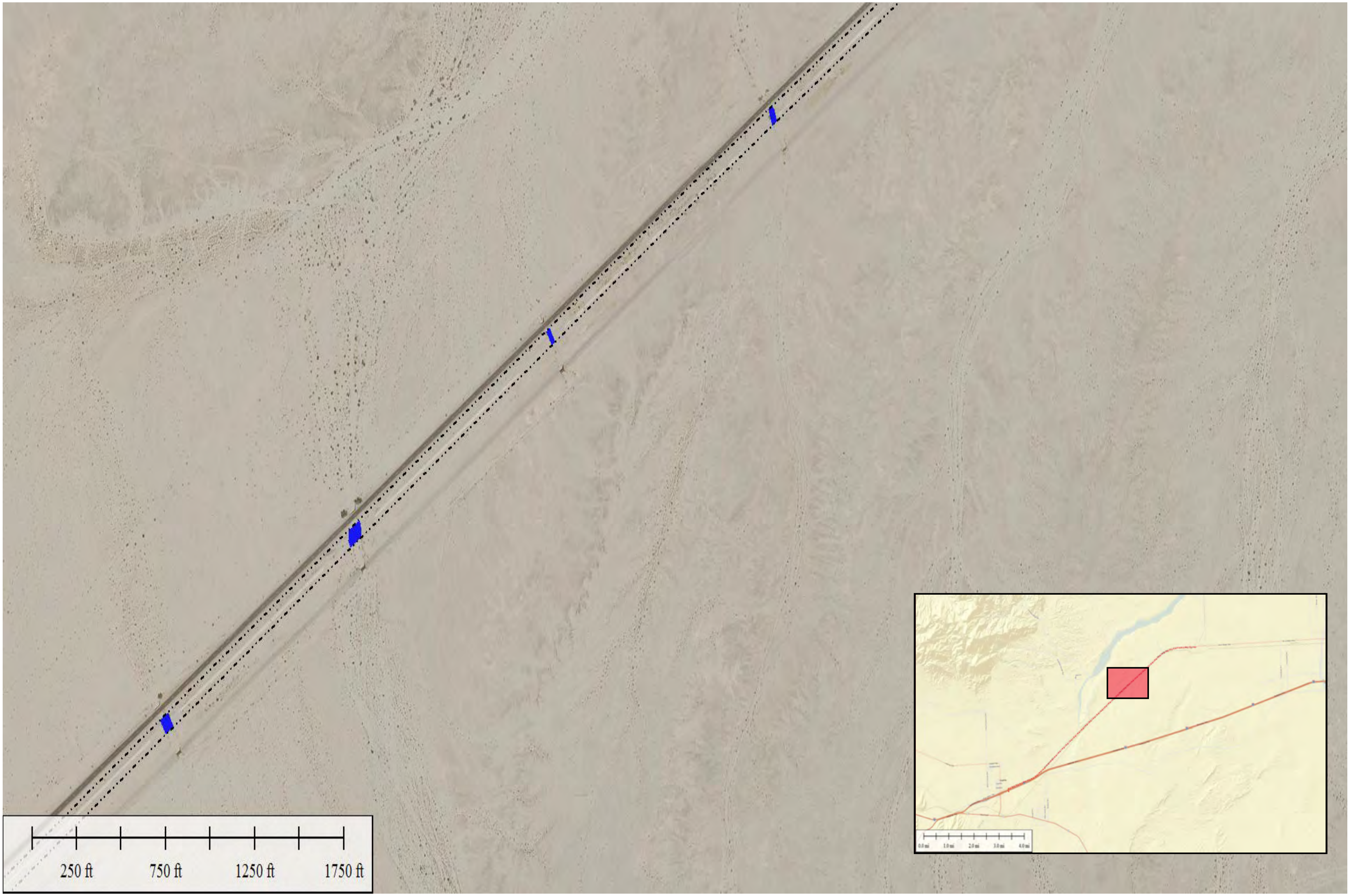

Figure 7 (6 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project

Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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Figure 7 (7 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

⬚	Waterline Alignment Survey Area
🟦	1.55 Acres State and Federal Jurisdictional Streams

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Environmental
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Figure 7 (8 of 8)

Water Line Replacement Jurisdictional Waters Map
USG Plaster City Mine Quarry
Expansion/Modernization Project
Imperial County, CA

Legend

┅ Waterline Alignment Survey Area

🟦 1.55 Acres State and Federal Jurisdictional Streams

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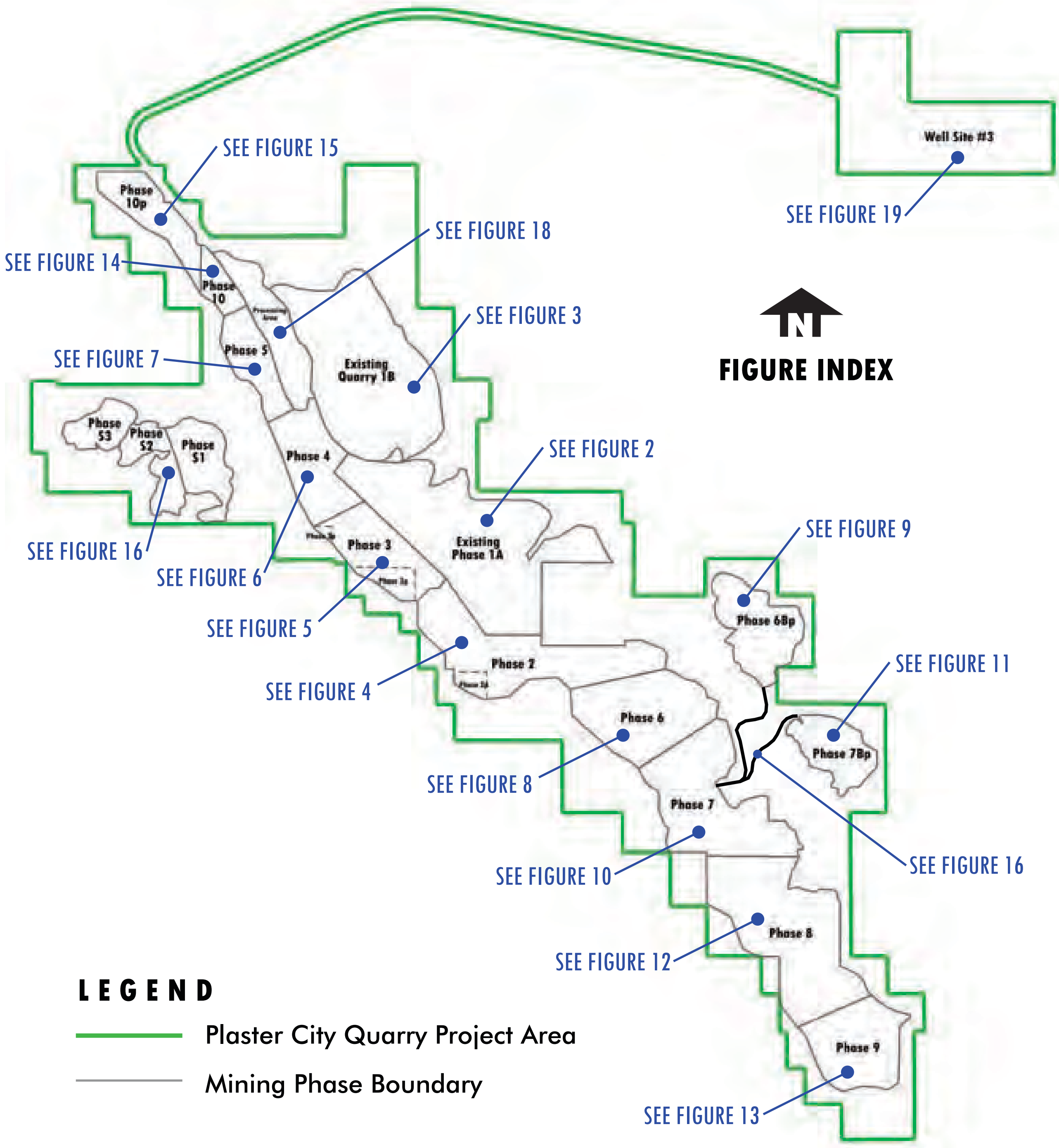
Services

APPENDIX A



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

		50' Wide Quarry Wash Diversion Berm Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
Item	Status	Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

JURISDICTIONAL WATERS IMPACT CALCULATIONS - SUMMARY

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 1

Prepared By (TAG 11/02/16)
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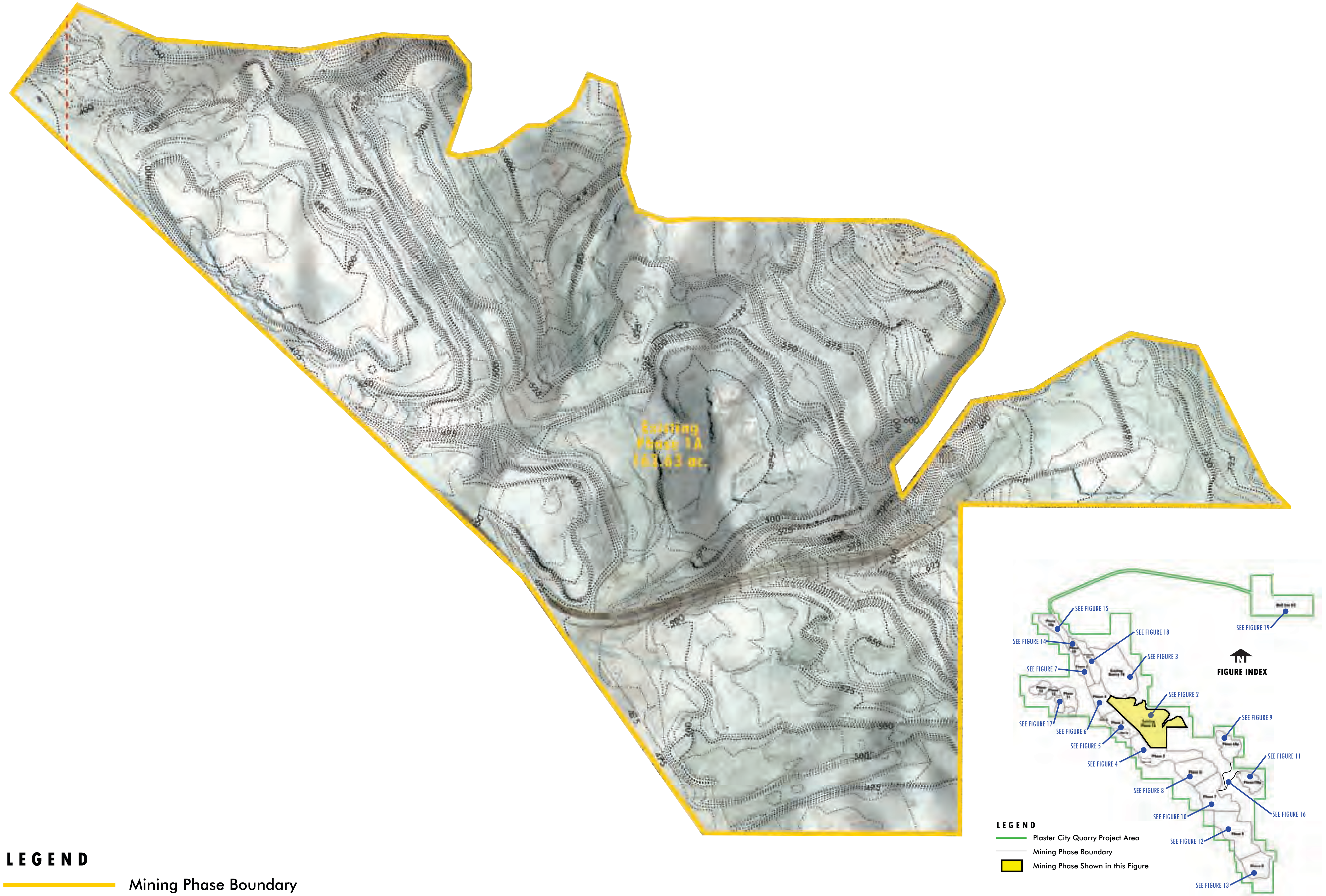
Jurisdictional Waters Impact Areas

No Impacts



LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1A

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 2

Jurisdictional Waters Impact Areas

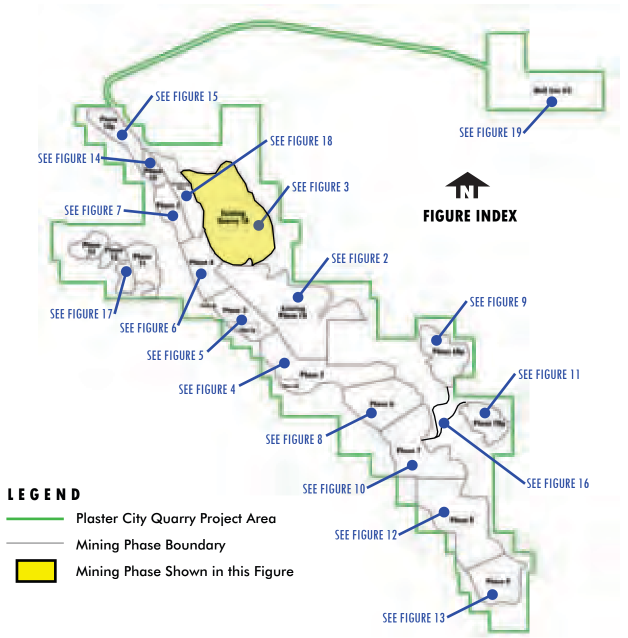
Sub Area	Linear Feet	Acres
A	180	0.03

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

🟨	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.



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🟩	Plaster City Quarry Project Area
	Mining Phase Boundary
🟨	Mining Phase Shown in this Figure

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 1B

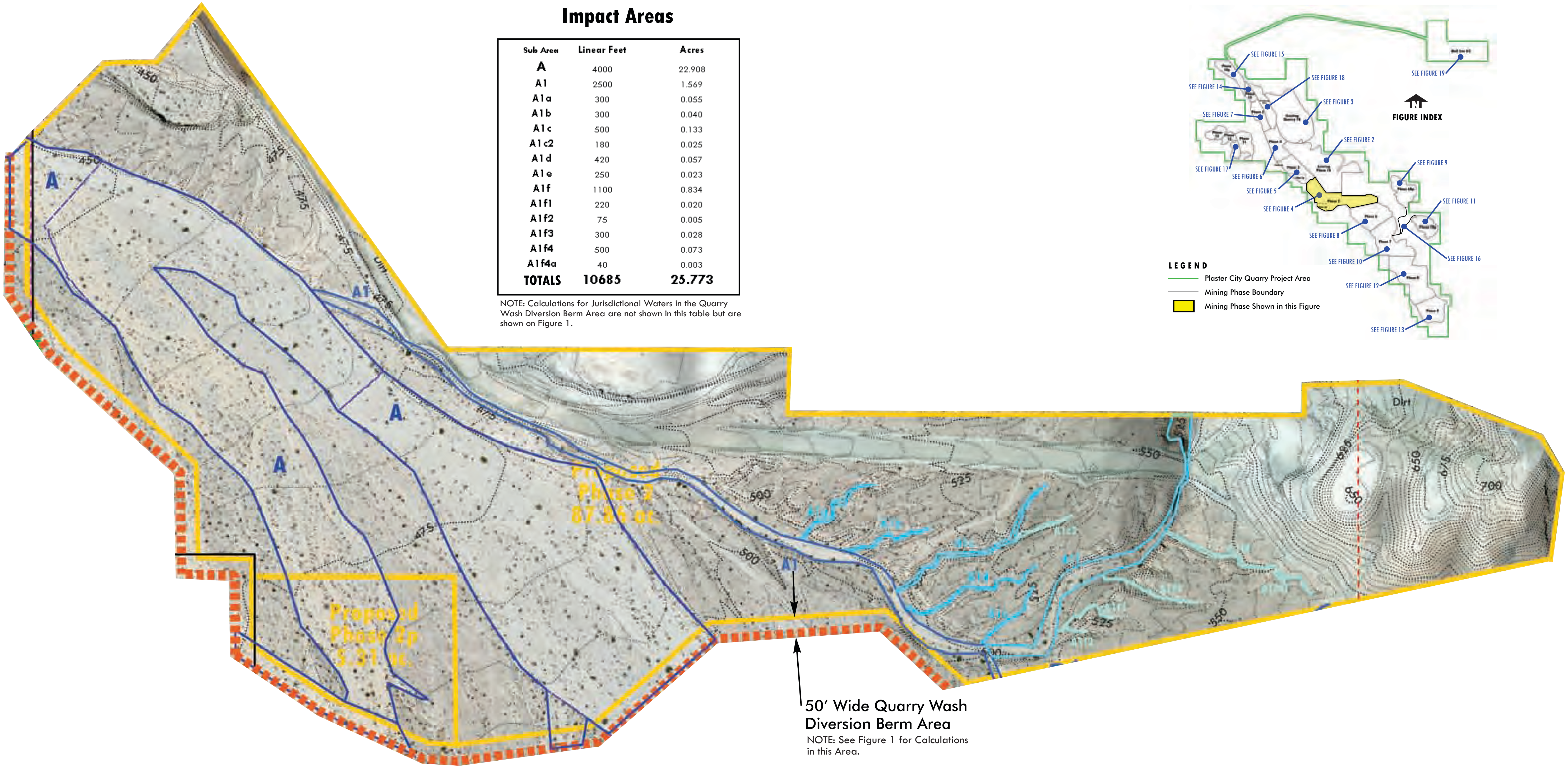
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 3

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	4000	22.908
A1	2500	1.569
A1a	300	0.055
A1b	300	0.040
A1c	500	0.133
A1c2	180	0.025
A1d	420	0.057
A1e	250	0.023
A1f	1100	0.834
A1f1	220	0.020
A1f2	75	0.005
A1f3	300	0.028
A1f4	500	0.073
A1f4a	40	0.003
TOTALS	**10685**	**25.773**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

LEGEND

━	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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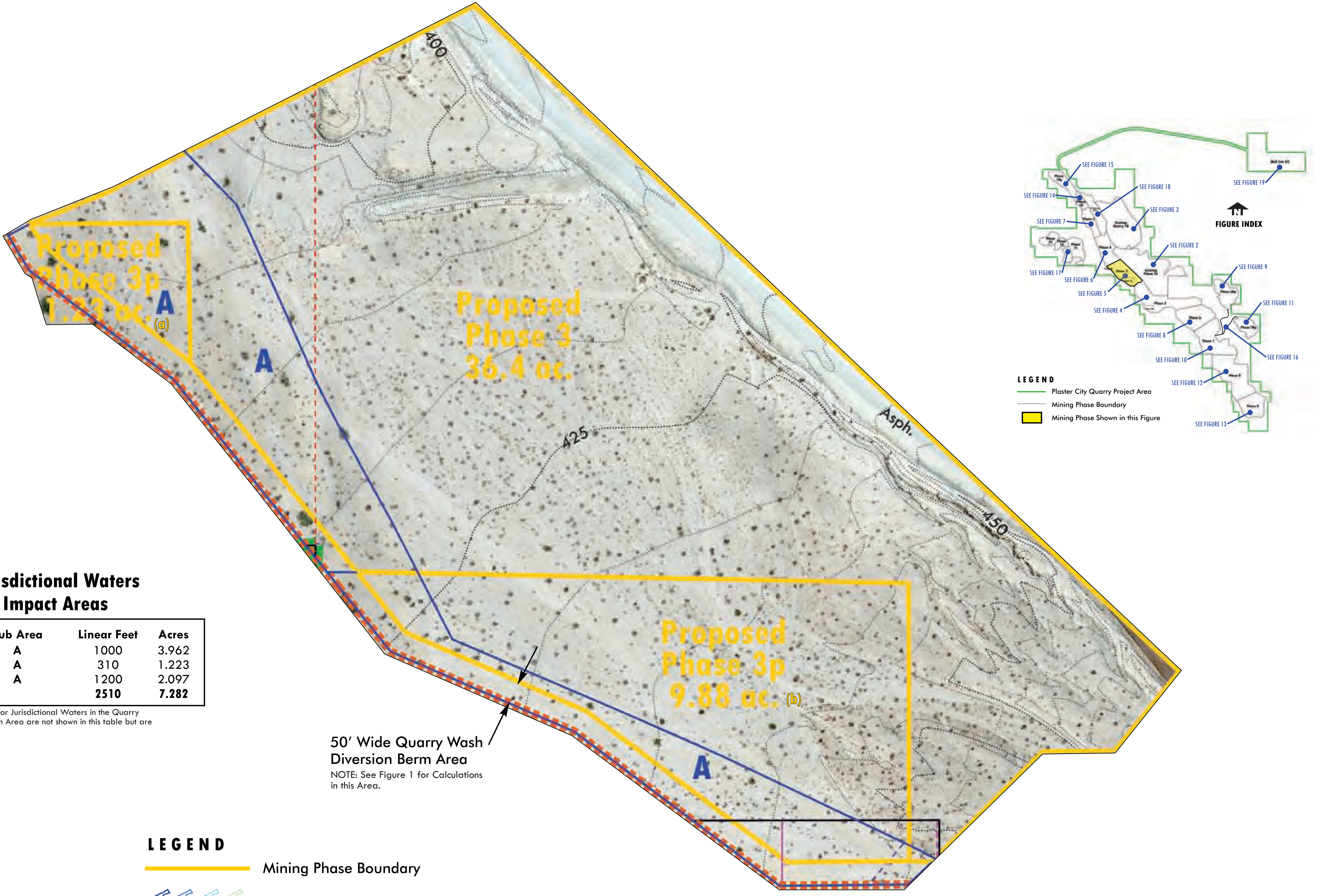
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 2

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 4



Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
3	A	1000	3.962
3p (a)	A	310	1.223
3p (b)	A	1200	2.097
TOTALS		**2510**	**7.282**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES 3 and 3p

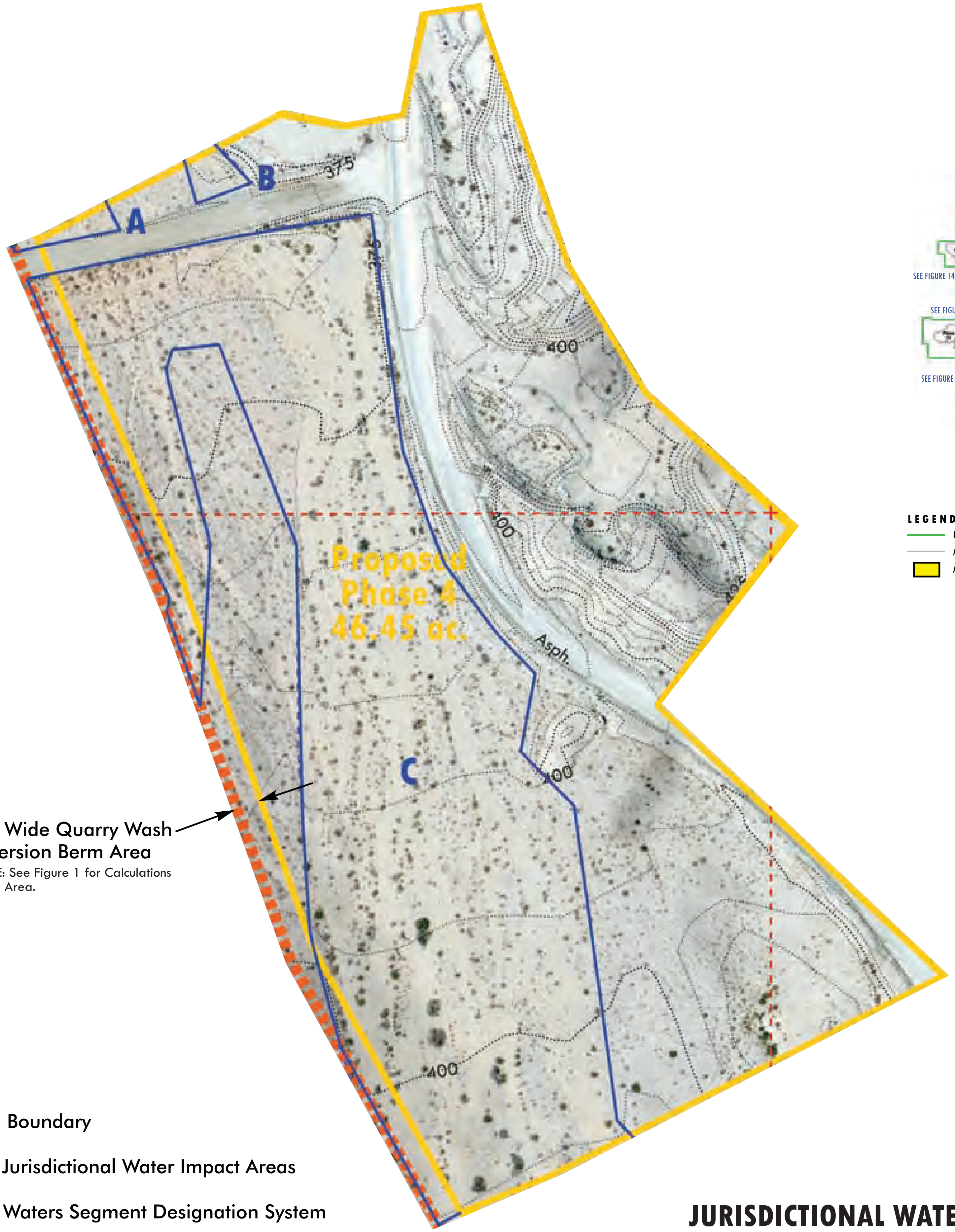
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 5

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	30	0.121
B	85	0.182
C	2600	19.803
TOTALS	**2715**	**20.106**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



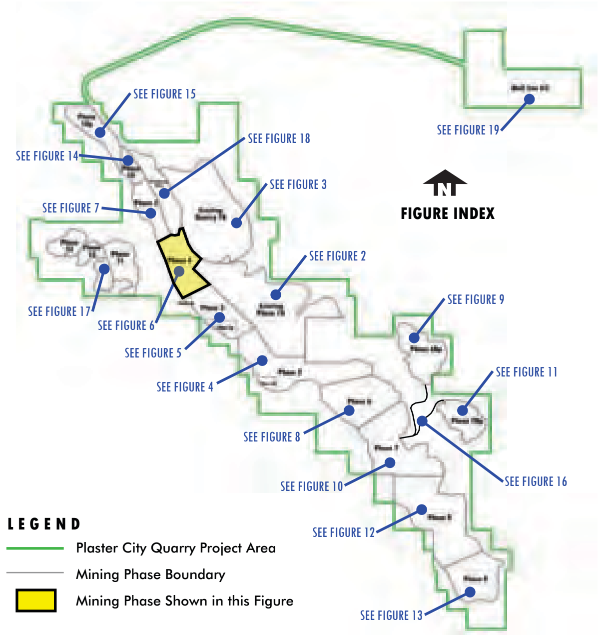
50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.



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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 4

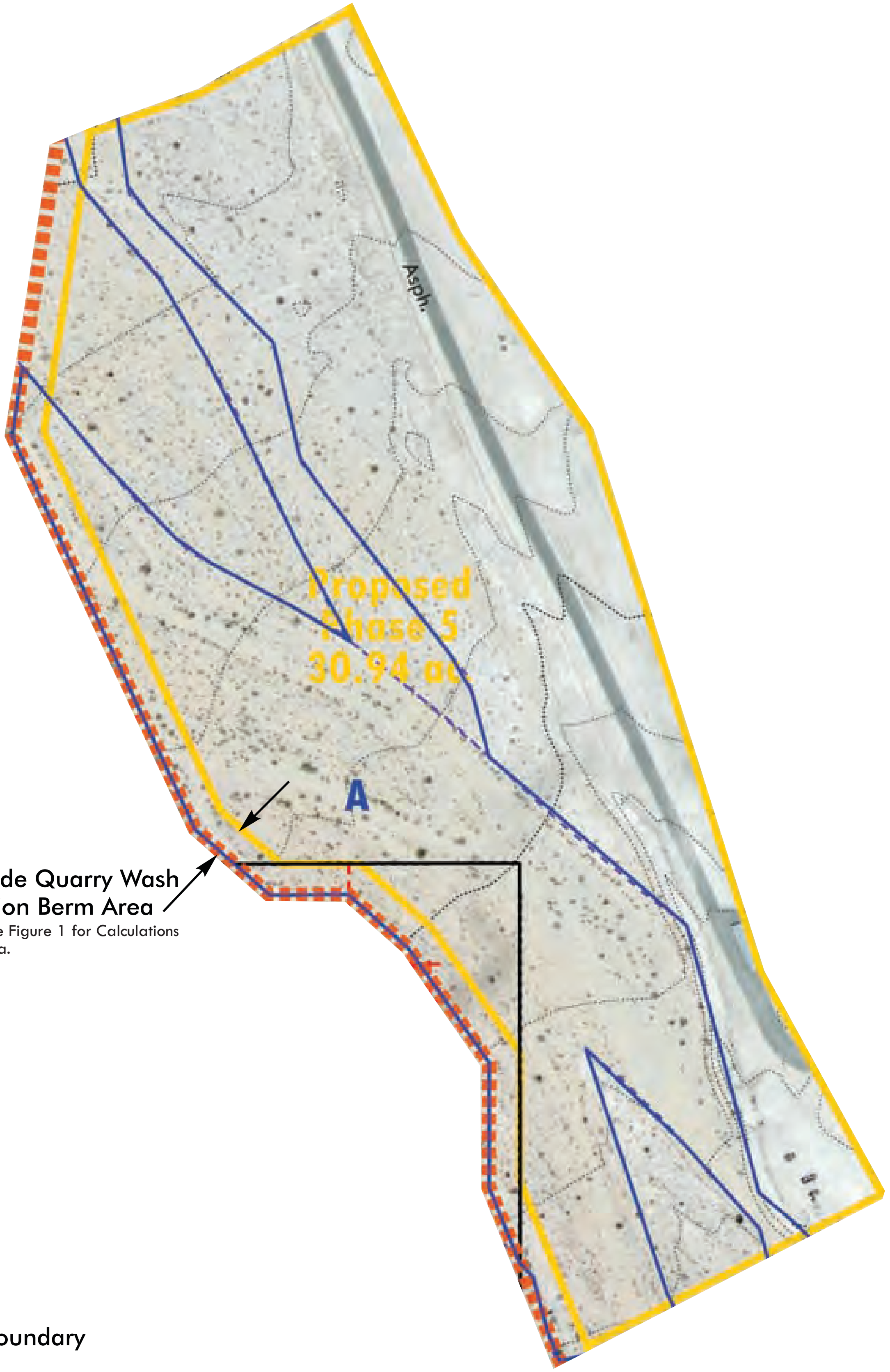
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 6

Jurisdictional Waters Impact Areas

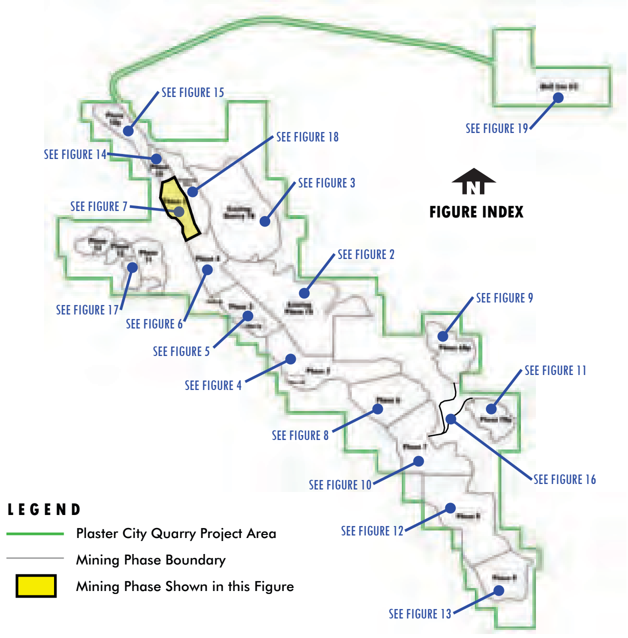
Sub Area	Linear Feet	Acres
A	3000	12.276

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



LEGEND

🟩	Plaster City Quarry Project Area
—	Mining Phase Boundary
🟨	Mining Phase Shown in this Figure

LEGEND

🟨	Mining Phase Boundary
⎰ ⎰ ⎰ ⎰	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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Prepared By (TAG 11/02/16):

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CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 5

SEIS - United States Gypsum Company - Plaster City Quarry

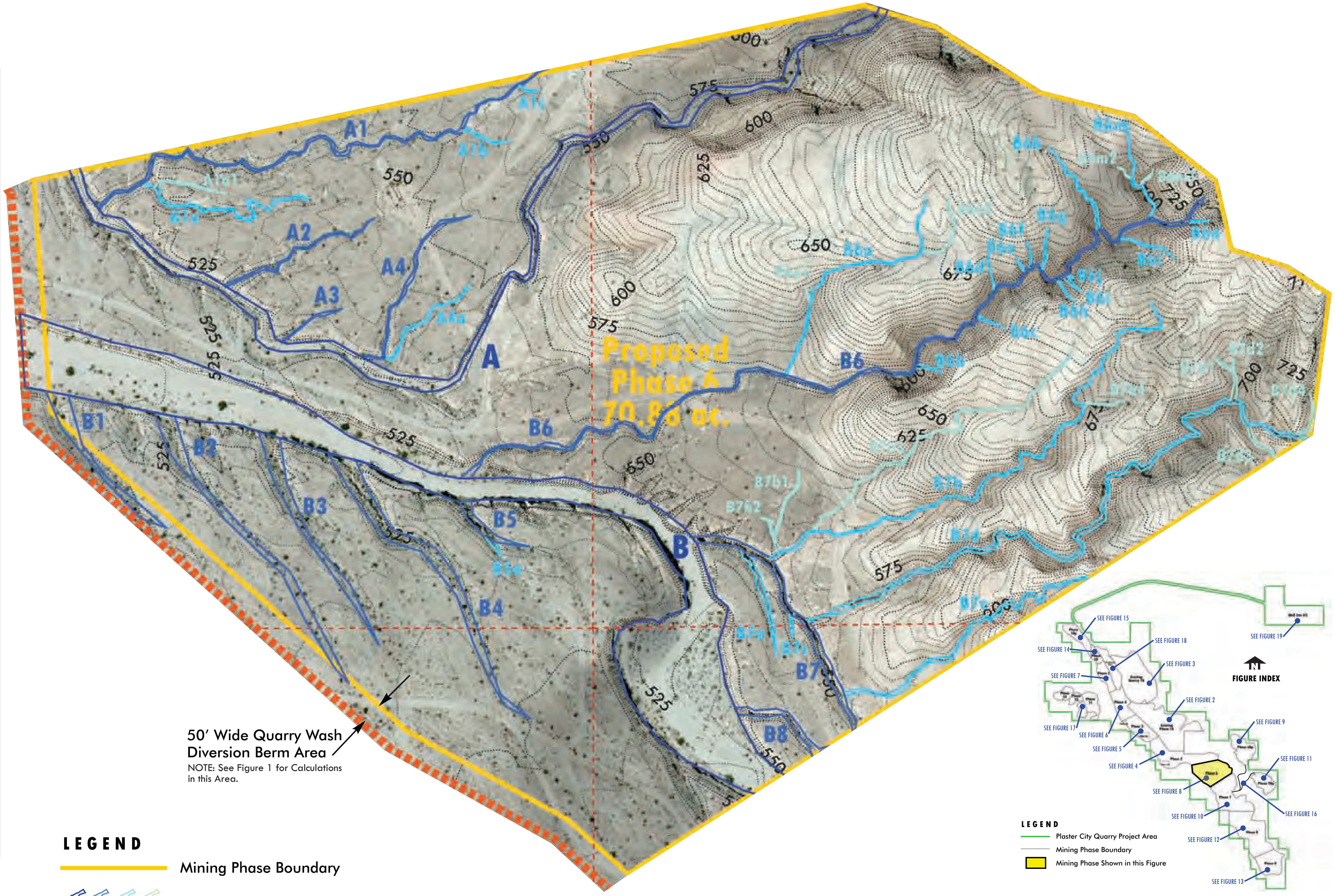
County of Imperial, California

Figure 7

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2450	0.968
A1	1165	0.117
A1a	475	0.041
A1a1	161	0.013
A1b	111	0.009
A1c	50	0.003
A2	390	0.035
A3	150	0.012
A4	440	0.042
A4a	265	0.021
B	2200	4.205
B1	130	0.064
B2	700	0.27
B3	530	0.189
B4	750	0.34
B5	825	0.05
B5a	63	0.006
B6	2044	0.242
B6a	575	0.043
B6a1	38	0.002
B6a2	165	0.010
B6b	60	0.005
B6c	65	0.004
B6d	72	0.003
B6e	35	0.003
B6f	50	0.001
B6g	95	0.007
B6h	60	0.004
B6i	50	0.004
B6j	20	0.001
B6k	222	0.018
B6l	130	0.009
B6m	233	0.015
B6m1	50	0.002
B6m2	45	0.002
B6n	44	0.003
B7	552	0.175
B7a	222	0.039
B7b	1222	0.094
B7b1	203	0.018
B7b2	57	0.004
B7bs	750	0.060
B7c	52	0.004
B7d	1500	0.232
B7d1	121	0.014
B7d2	25	0.001
B7b3	100	0.013
B7b4	105	0.012
B7e	684	0.091
B8	237	0.064
TOTALS	**20737**	**7.584**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50′ Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6

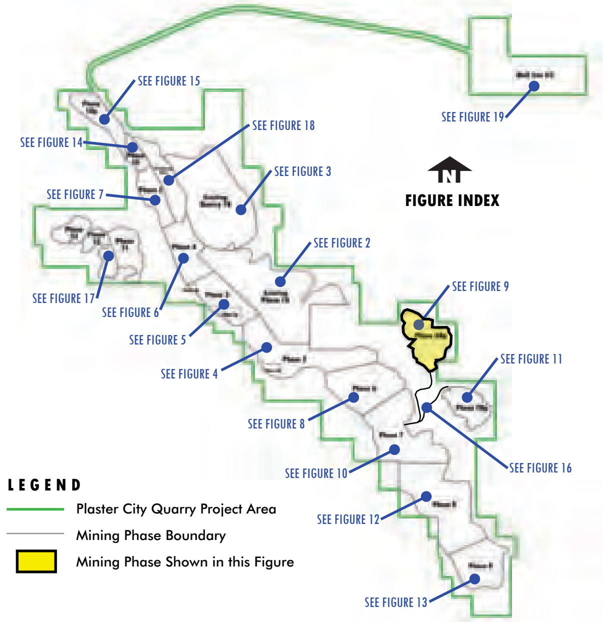
SEIS - United States Gypsum Company - Plaster City Quarry

County of Imperial, California

Figure 8

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	250	0.050
A1	100	0.017
A2	65	0.011
B	850	0.156
B1	280	0.033
B1a	110	0.008
B2	320	0.047
B2a	160	0.019
B3	60	0.002
B4	60	0.007
C	220	0.041
D	25	0.001
E	125	0.016
F	50	0.003
G	650	0.116
G1	250	0.027
G2	280	0.059
G2a	65	0.009
H	850	0.091
H1	190	0.015
I	150	0.012
J	70	0.009
K	900	0.170
K1	88	0.017
TOTALS	**6168**	**0.935**



LEGEND

- Mining Phase Boundary
- Color Coded Jurisdictional Water Impact Areas
- A A3 A3a A3a1 Jurisdictional Waters Segment Designation System
- Outer Limits of 50′ Wide Quarry Wash Diversion Berm

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Prepared By (TAG 11/02/16):
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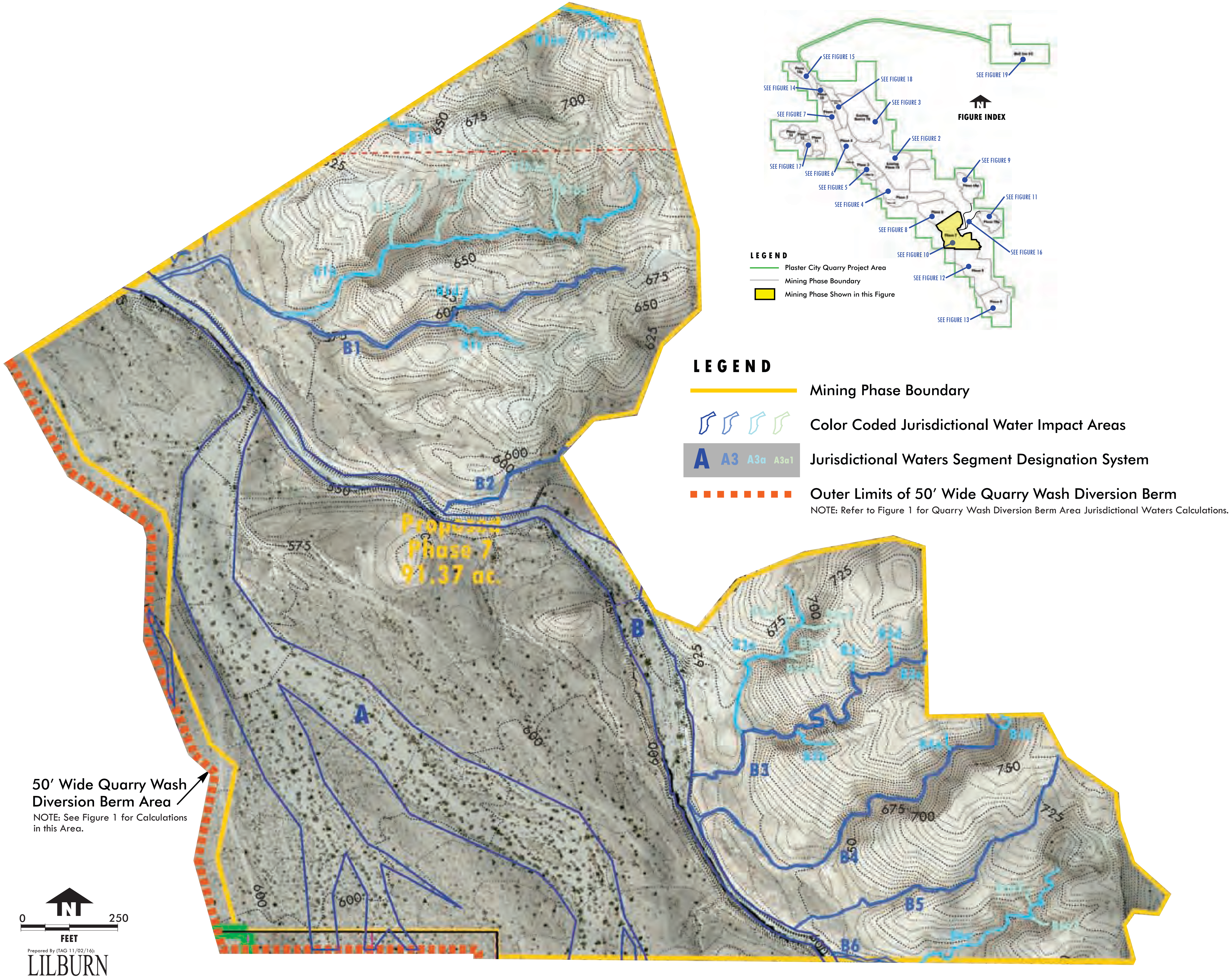
CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 6Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 9



LEGEND

Plaster City Quarry Project Area

Mining Phase Boundary

🟨 Mining Phase Shown in this Figure

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

▪▪▪▪▪▪▪▪ Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

Prepared By (TAG 11/02/16)

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Jurisdictional Waters Impact Areas

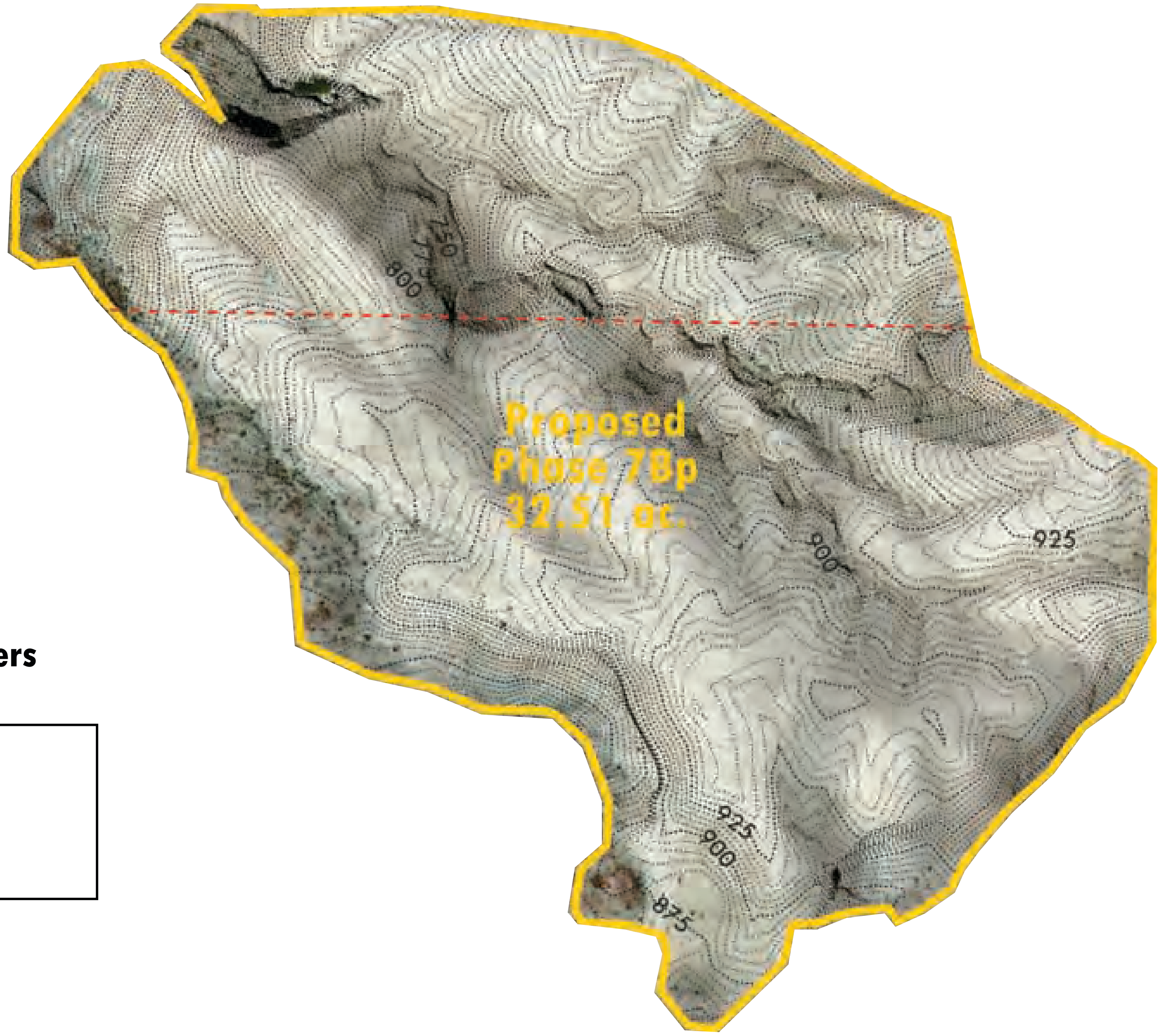
Sub Area	Linear Feet	Acres
A	3200	9.670
B	3000	2.941
B1	1500	0.229
B1a	100	0.009
B1aa	35	0.001
B1aaa	150	0.017
B1b	1230	0.168
B1c	230	0.023
B1d	65	0.006
B1b1	200	0.020
Bib2	250	0.033
B1b3	175	0.023
B1b3a	35	0.001
B2	410	0.043
B3	1050	0.114
B3a	550	0.062
B3a2	40	0.002
B3a1	75	0.005
B3a1a	30	0.001
B3a3	110	0.009
B3b	120	0.007
B3c	31	0.002
B3d	70	0.004
B3e	10	0.001
B4	1250	0.119
B4a	50	0.002
B4b	75	0.004
B5	1000	0.071
B6	85	0.015
B6a	550	0.035
B6a2	50	0.002
B6a1	40	0.003
TOTALS	15766	13.642

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7

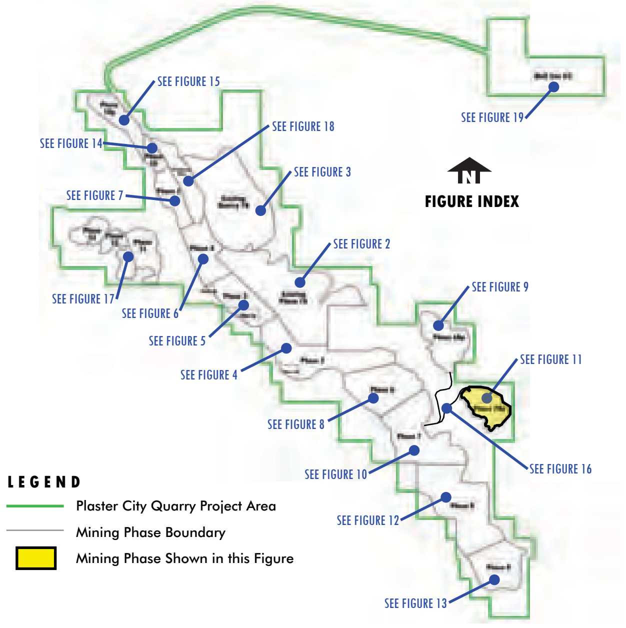
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 10



Jurisdictional Waters Impact Areas

No Impacts



LEGEND

▬	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

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Prepared By (TAG 11/02/16):
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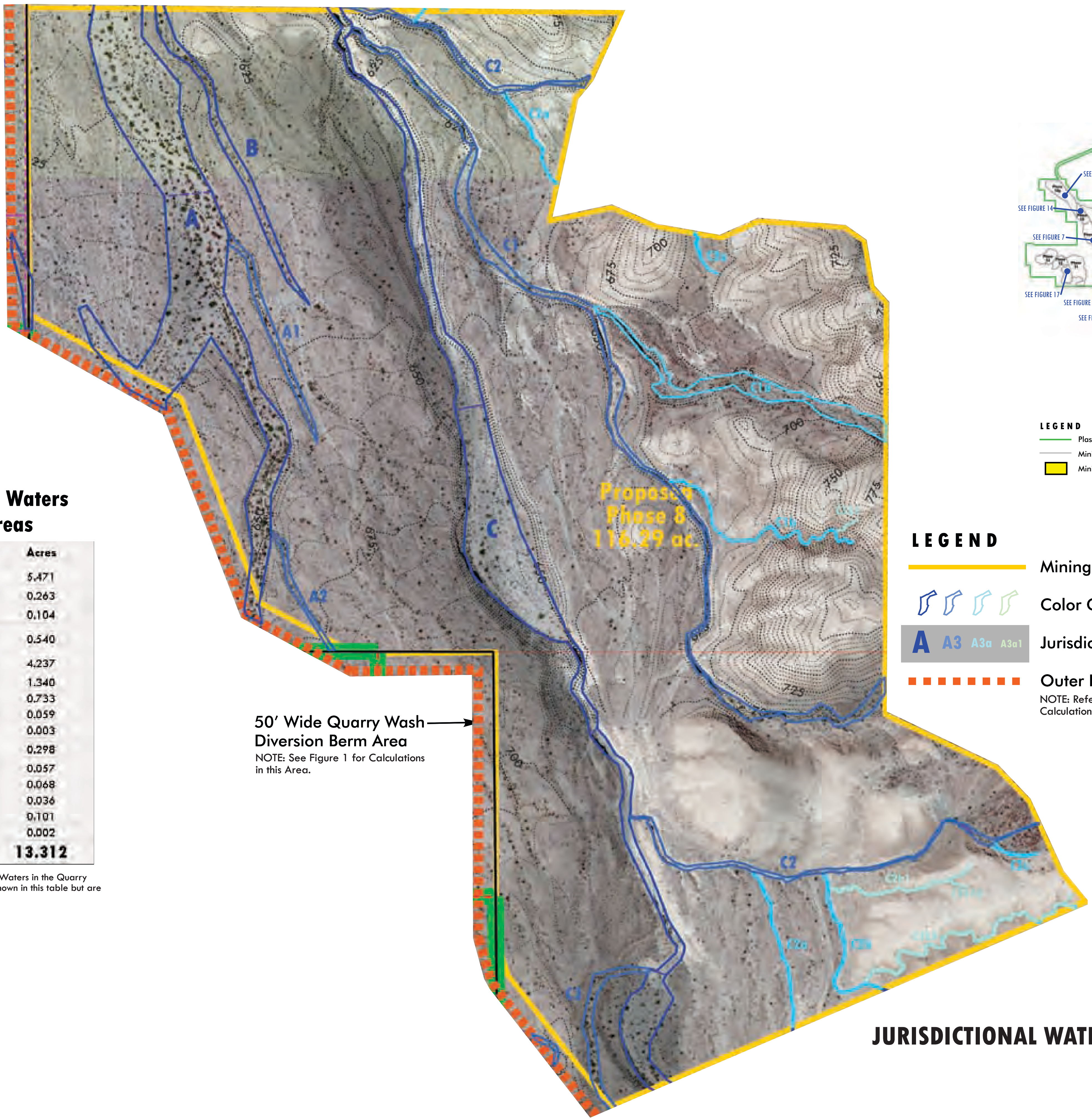
CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 7Bp

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 11



50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.

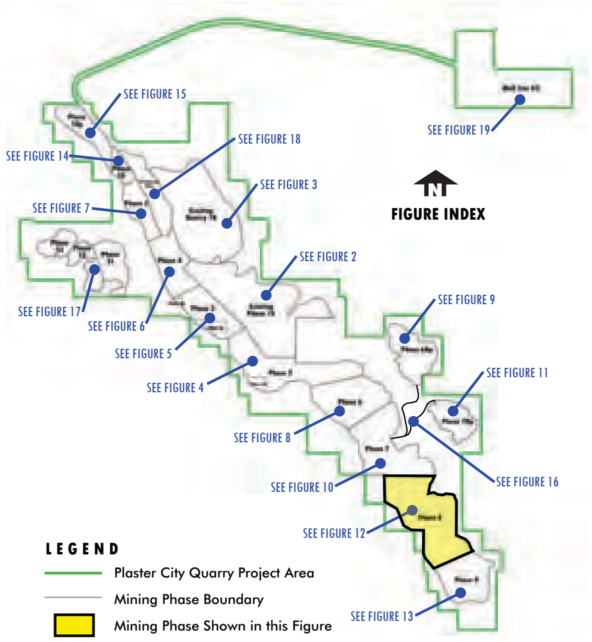
Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	2300	5.471
A1	600	0.263
A2	350	0.104
B	1000	0.540
C	3500	4.237
C1	3000	1.340
C1a	1000	0.733
C1b	750	0.059
C1b1	80	0.003
C2	1300	0.298
C2a	500	0.057
C2b	500	0.068
C2b1	450	0.036
C2b2	900	0.101
C2b1a	50	0.002
TOTALS	**16280**	**13.312**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

━━━	Mining Phase Boundary
∫ ∫ ∫ ∫	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50' Wide Quarry Wash Diversion Berm NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.



JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 8

SEIS - United States Gypsum Company - Plaster City Quarry

County of Imperial, California

Figure 12

Prepared By (TAG 11/02/16):
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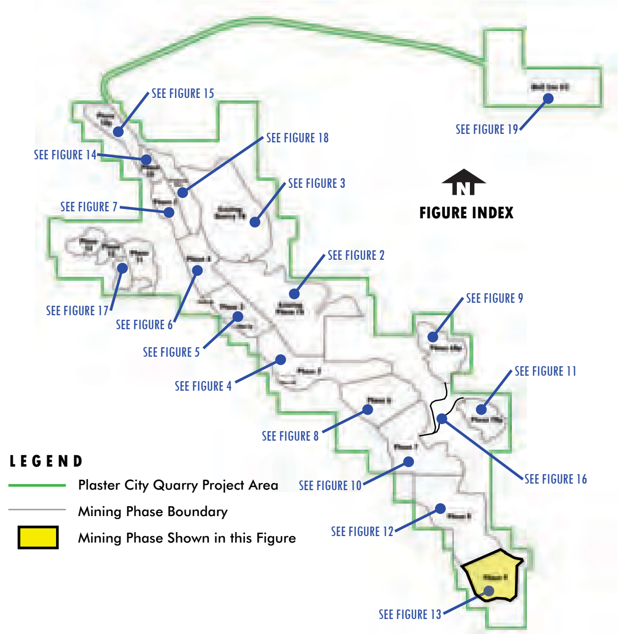
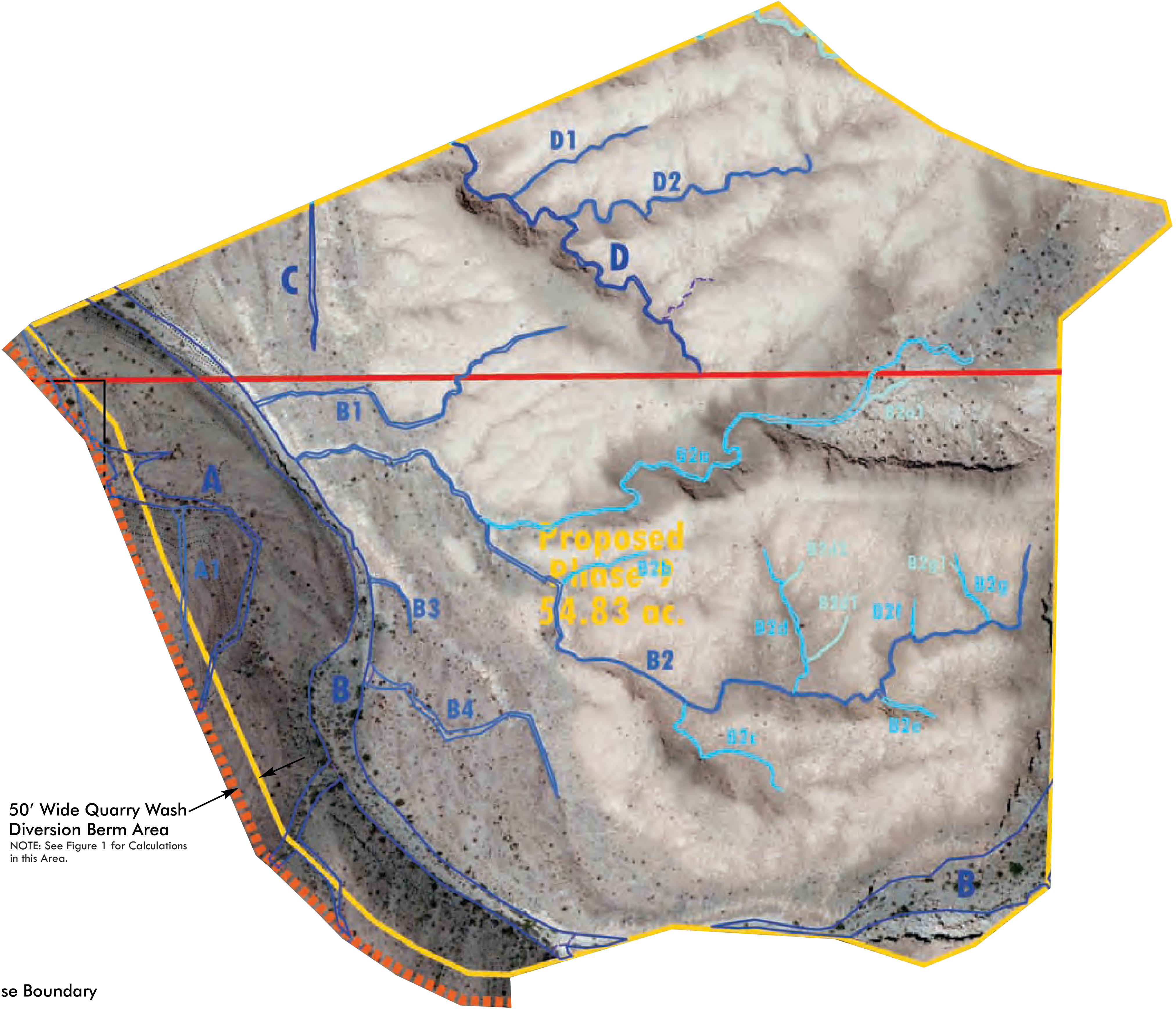
CORPORATION



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	600	0.176
A1	200	0.040
B	2000	1.657
B1	700	0.077
B2	2000	0.190
B2a	1200	0.156
B2a1	100	0.007
B2b	150	0.010
B2c	300	0.021
B2d	300	0.022
B2d1	125	0.005
B2d2	60	0.003
B2e	100	0.013
B2f	70	0.003
B2g	140	0.012
B2g1	25	0.001
B3	150	0.012
B4	500	0.114
TOTALS	8220	2.519

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50' Wide Quarry Wash Diversion Berm Area
NOTE: See Figure 1 for Calculations in this Area.

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 9

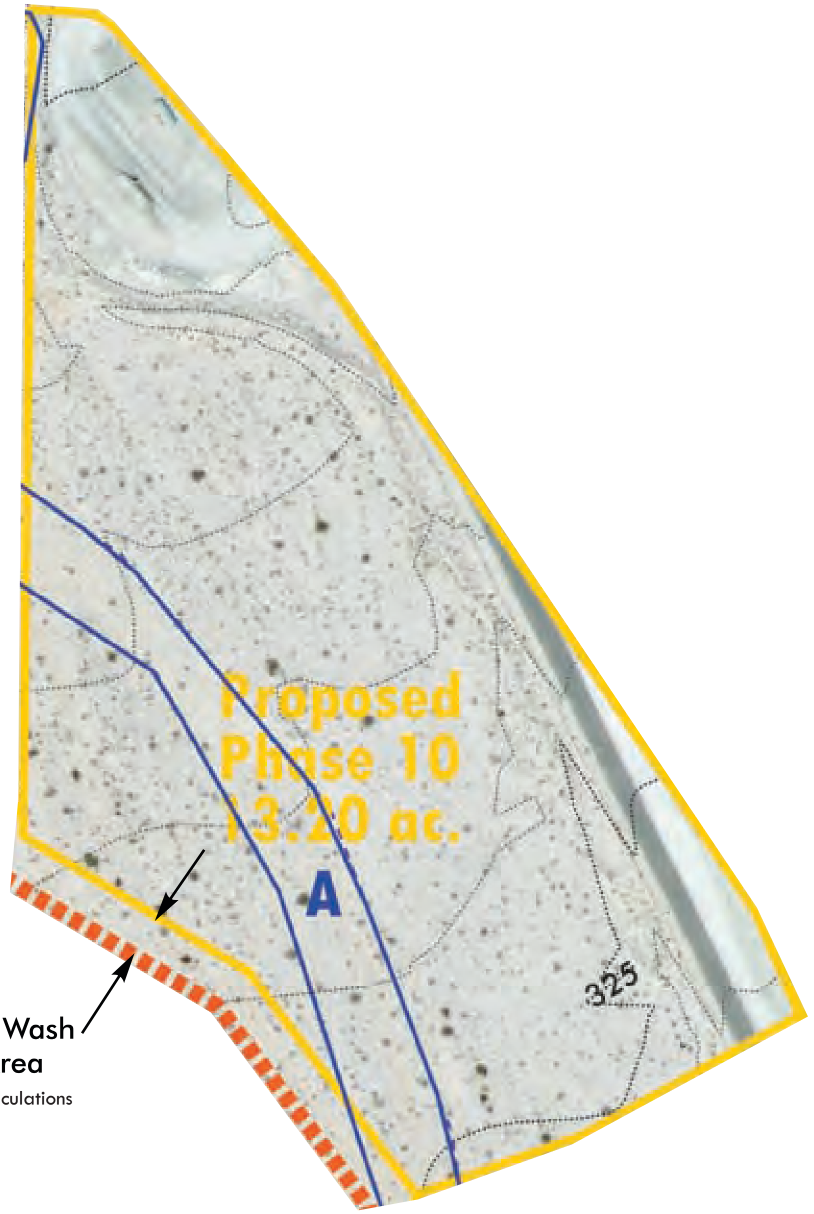
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 13

Jurisdictional Waters Impact Areas

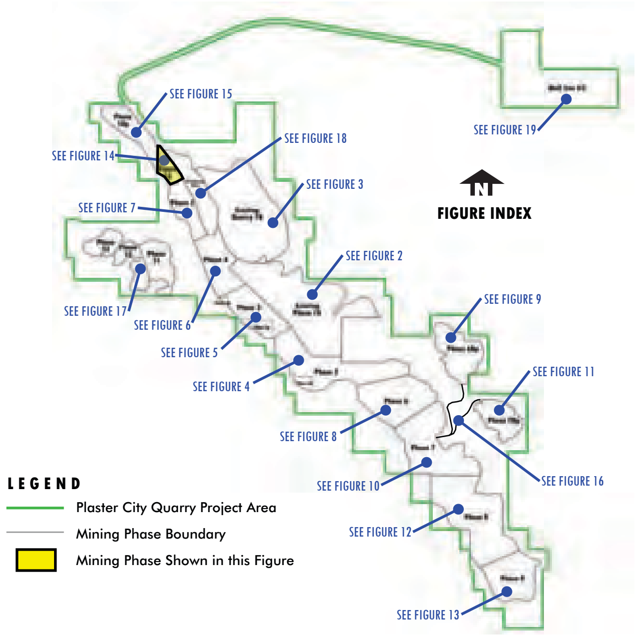
Sub Area	Linear Feet	Acres
A	900	1.572

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.



50' Wide Quarry Wash Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

Outer Limits of 50' Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

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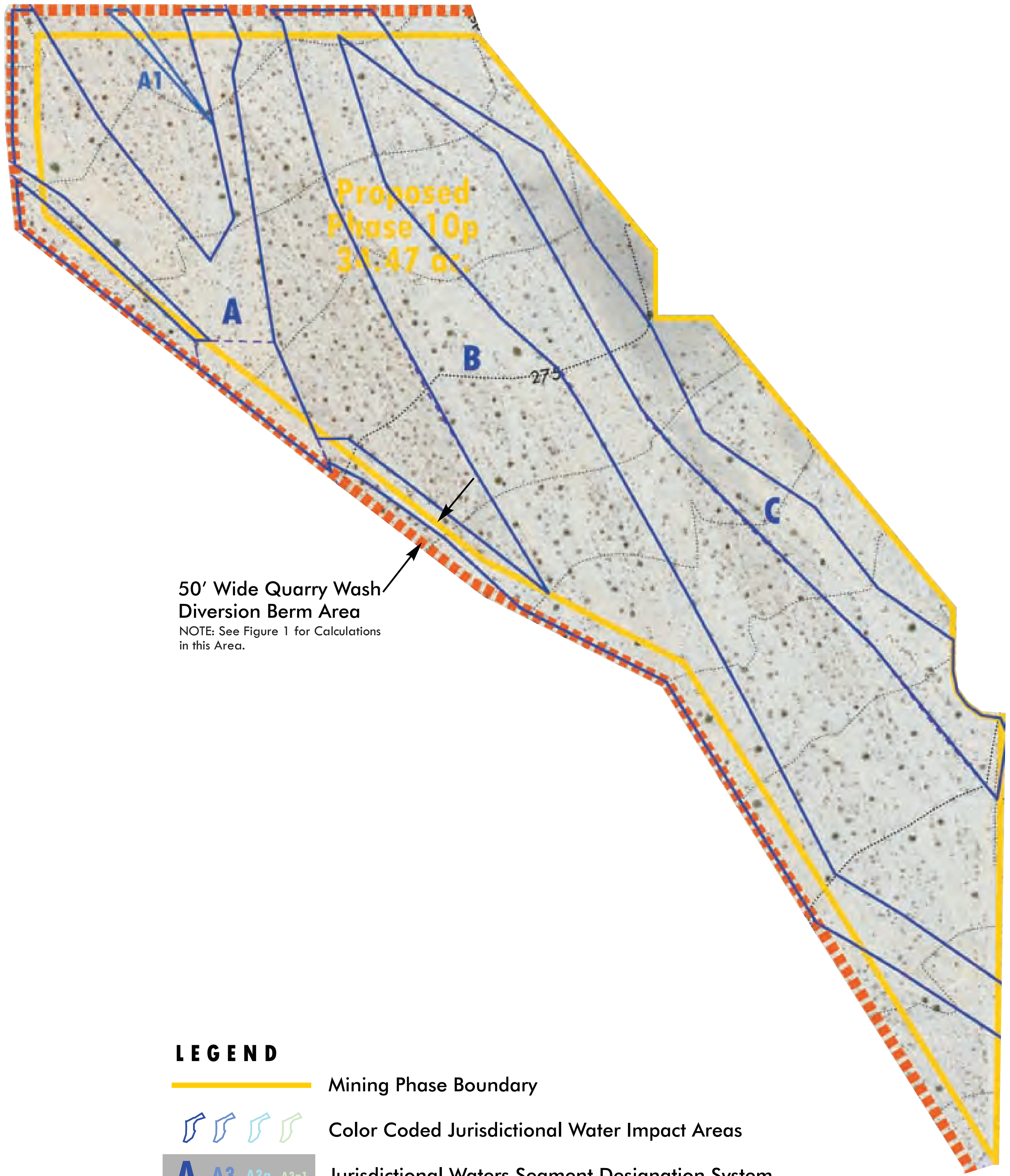
0 200
FEET

Prepared By (TAG 11/02/16)
LILBURN
CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10

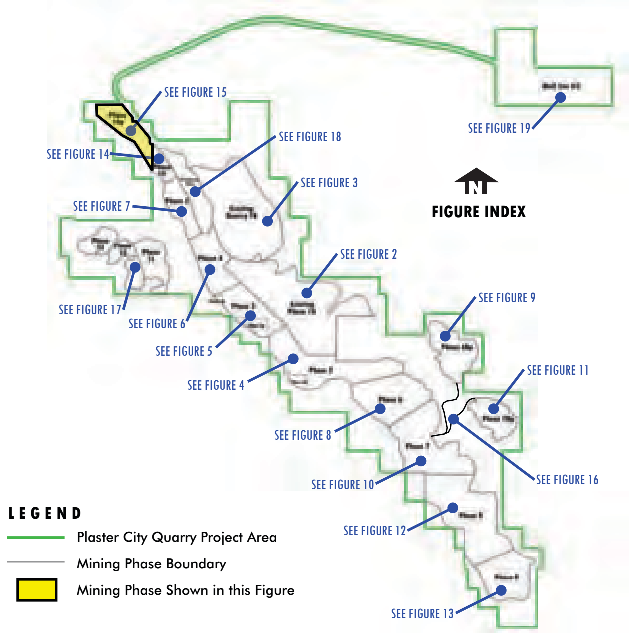
SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 14



50′ Wide Quarry Wash
Diversion Berm Area

NOTE: See Figure 1 for Calculations in this Area.



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	1400	3.007
B	2450	7.194
C	2000	3.638
TOTALS	**5850**	**13.839**

NOTE: Calculations for Jurisdictional Waters in the Quarry Wash Diversion Berm Area are not shown in this table but are shown on Figure 1.

LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

■ ■ ■ ■ ■ ■ ■ Outer Limits of 50′ Wide Quarry Wash Diversion Berm

NOTE: Refer to Figure 1 for Quarry Wash Diversion Berm Area Jurisdictional Waters Calculations.

0 250
FEET

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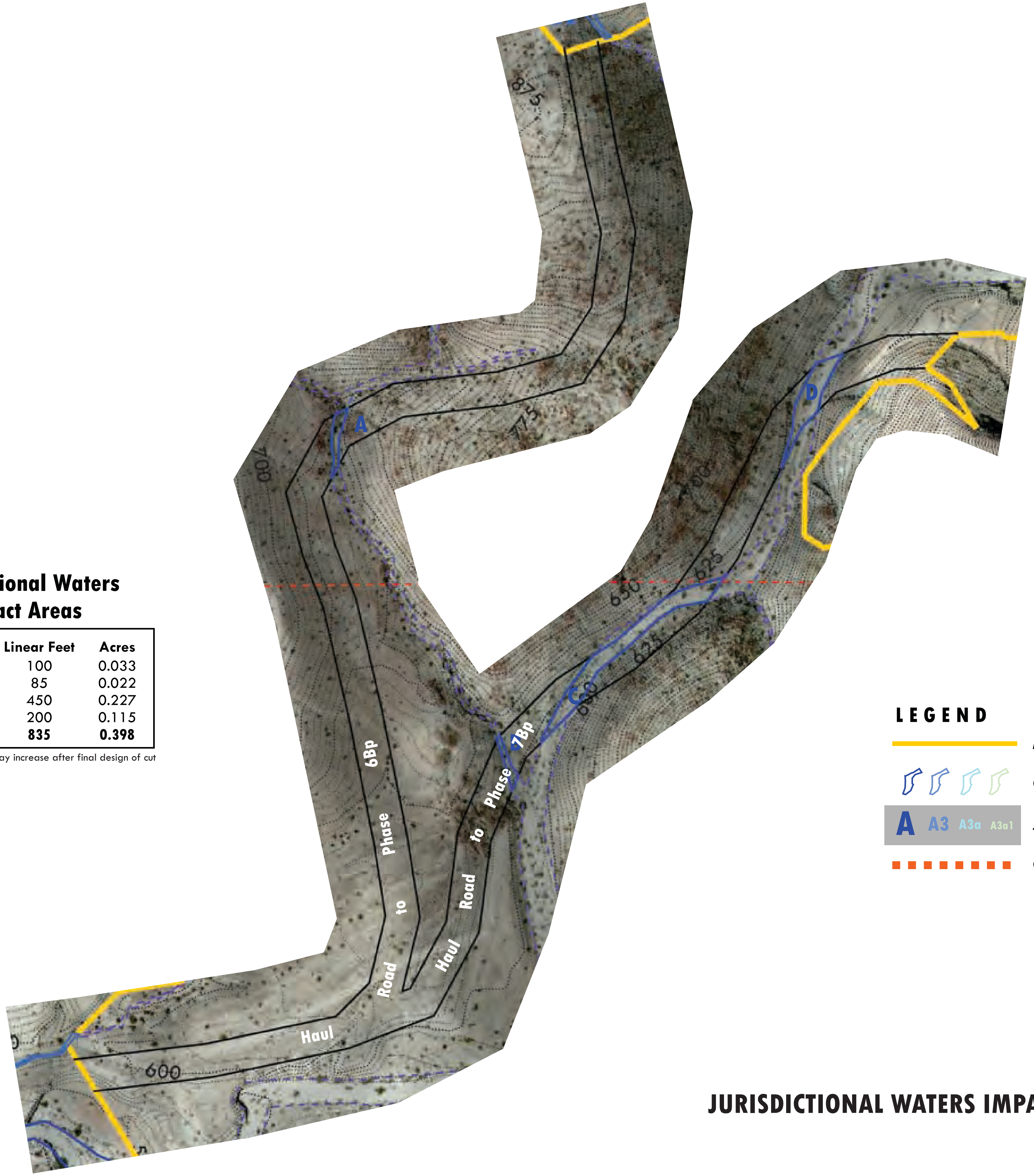
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASE 10p

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

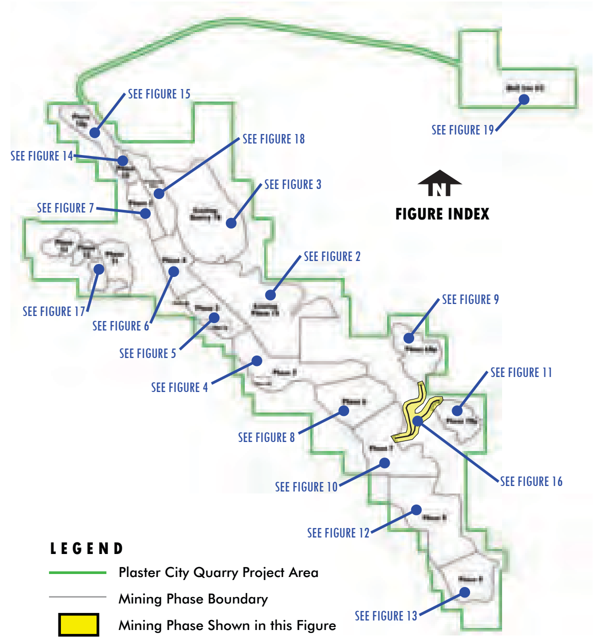
Figure 15



Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	100	0.033
B	85	0.022
C	450	0.227
D	200	0.115
TOTALS	**835**	**0.398**

NOTE: Haul Road Impacts may increase after final design of cut and fill slopes.



LEGEND

Mining Phase Boundary

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

■ ■ ■ ■ ■ ■ ■ ■ Outer Limits of 50' Wide Quarry Wash Diversion Berm

0 200

FEET

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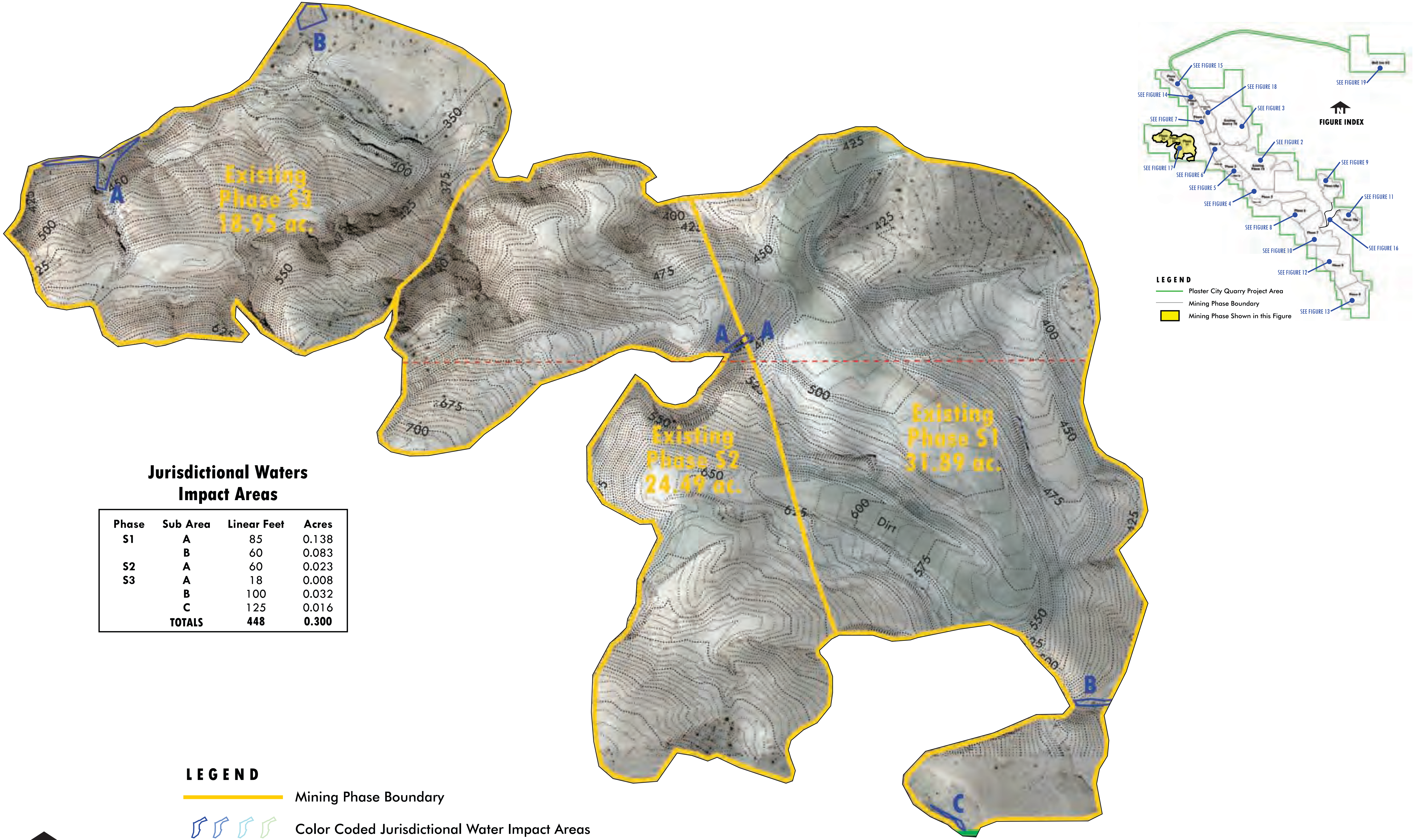
JURISDICTIONAL WATERS IMPACT CALCULATIONS - HAUL ROADS NORTH and SOUTH

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 16



Jurisdictional Waters Impact Areas

Phase	Sub Area	Linear Feet	Acres
S1	A	85	0.138
	B	60	0.083
S2	A	60	0.023
S3	A	18	0.008
	B	100	0.032
	C	125	0.016
	TOTALS	**448**	**0.300**

LEGEND

🟨	Mining Phase Boundary
	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪	Outer Limits of 50′ Wide Quarry Wash Diversion Berm

0 250
FEET

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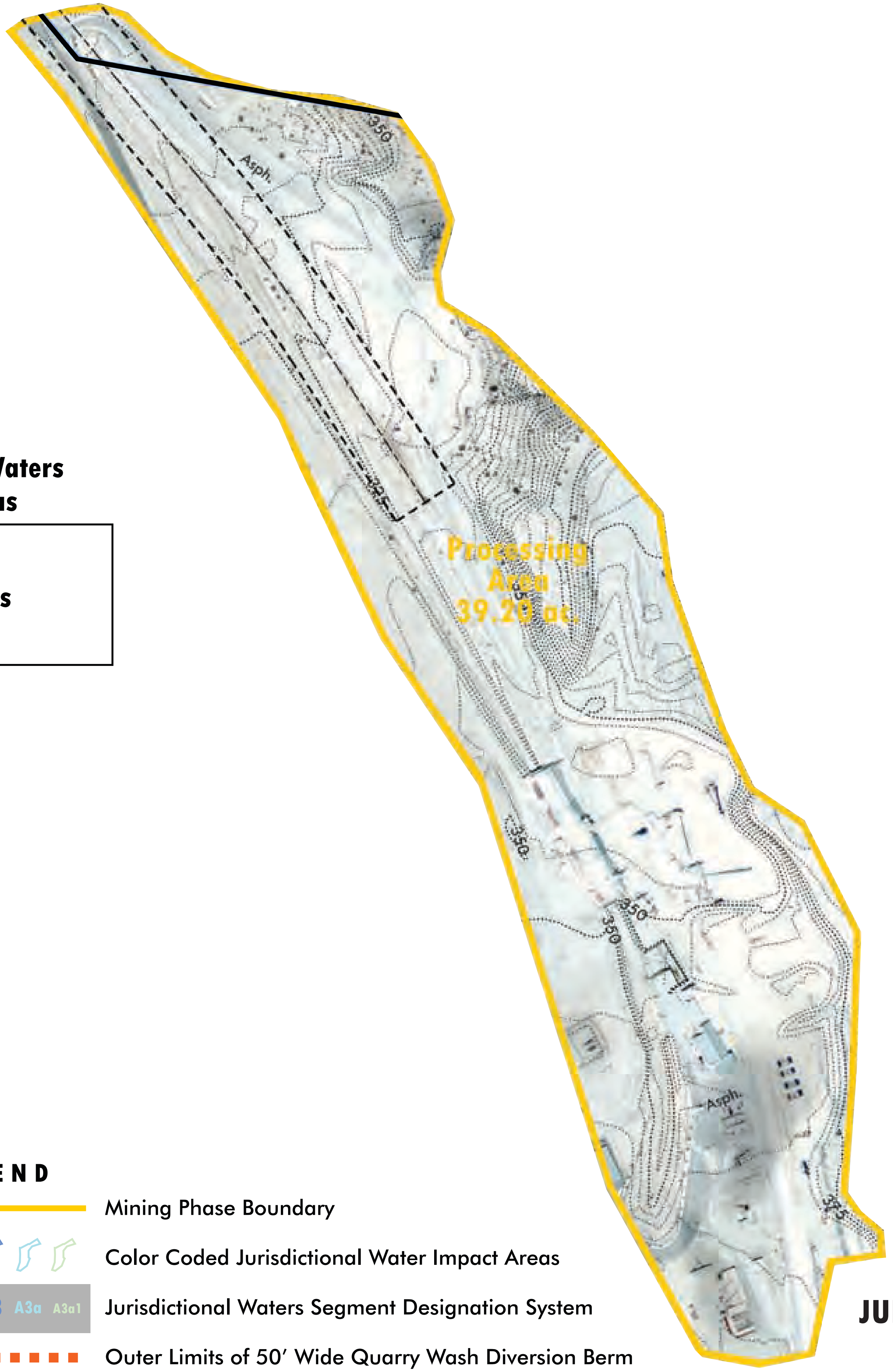
CORPORATION

JURISDICTIONAL WATERS IMPACT CALCULATIONS - PHASES S1, S2 and S3

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 17

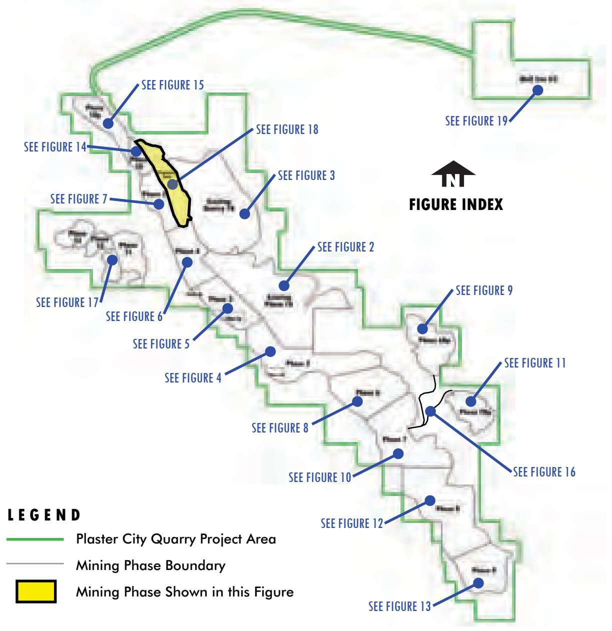


Jurisdictional Waters Impact Areas

No Impacts

LEGEND

🟨	Mining Phase Boundary
⌇ ⌇ ⌇ ⌇	Color Coded Jurisdictional Water Impact Areas
A A3 A3a A3a1	Jurisdictional Waters Segment Designation System
■ ■ ■ ■ ■ ■ ■ ■	Outer Limits of 50′ Wide Quarry Wash Diversion Berm



N

0 300

FEET

Prepared By (TAG 11/02/16):

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CORPORATION

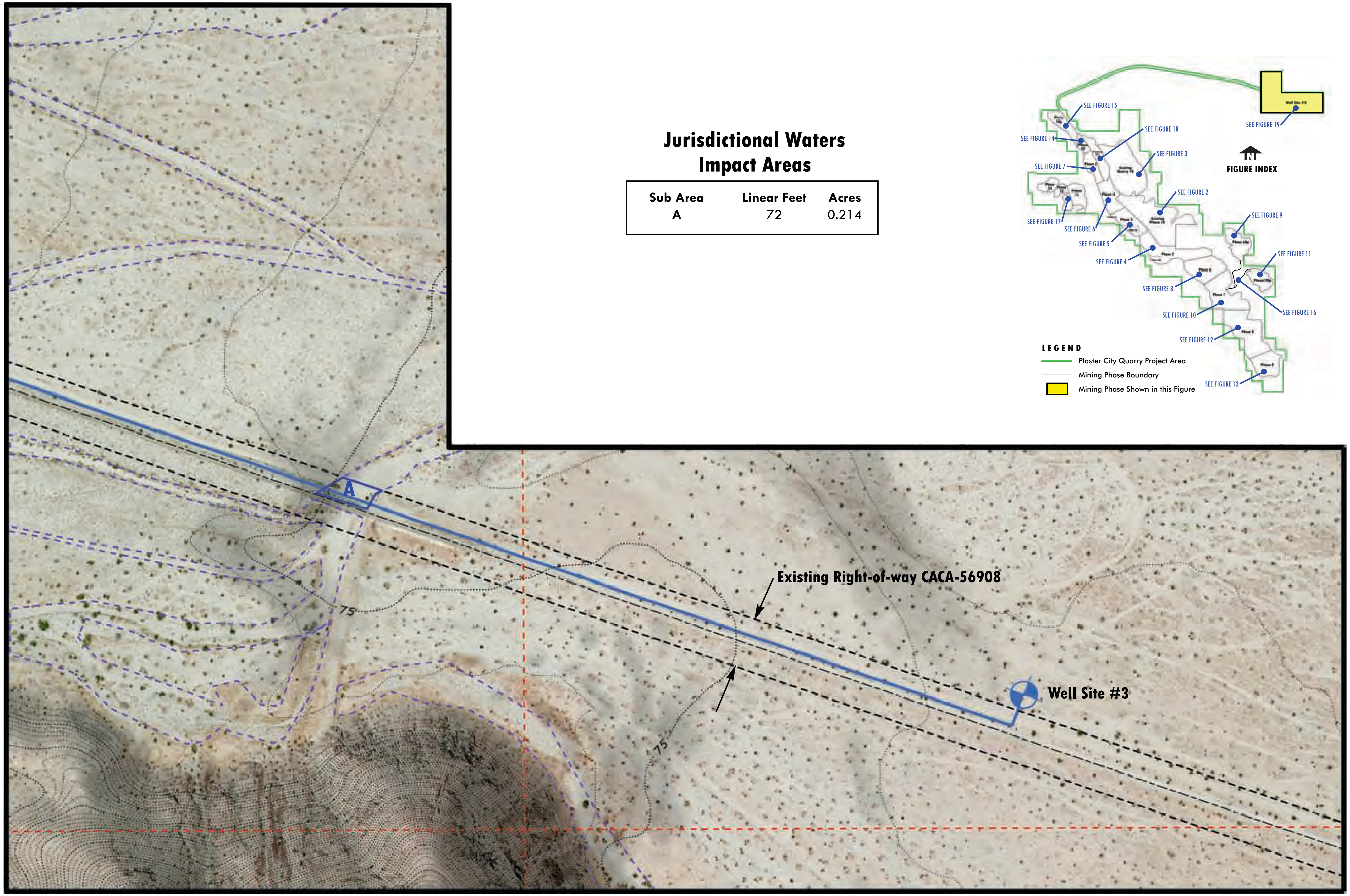
JURISDICTIONAL WATERS IMPACT CALCULATIONS - PROCESSING AREA

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 18

Jurisdictional Waters Impact Areas

Sub Area	Linear Feet	Acres
A	72	0.214



LEGEND

▬ USG Patented Land

Color Coded Jurisdictional Water Impact Areas

A A3 A3a A3a1 Jurisdictional Waters Segment Designation System

▬ Proposed Waterline/Powerline

0 300
FEET

Prepared By (TAG 11/02/16):
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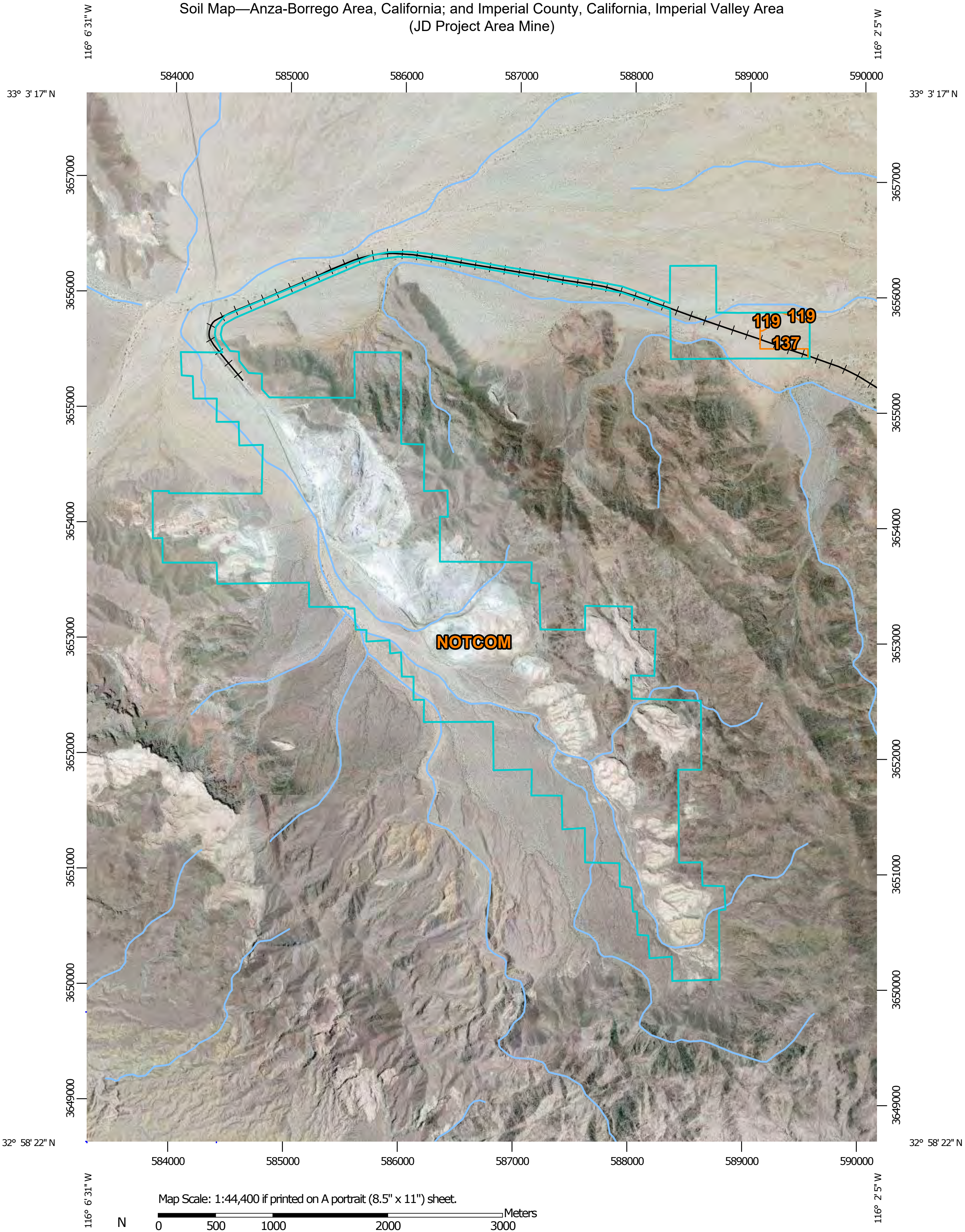
JURISDICTIONAL WATERS IMPACT CALCULATIONS - WELL SITE #3

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

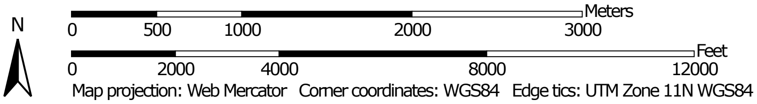
Figure 19

APPENDIX B

Soil Map—Anza-Borrego Area, California; and Imperial County, California, Imperial Valley Area
(JD Project Area Mine)



Map Scale: 1:44,400 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Anza-Borrego Area, California
Survey Area Data: Version 1, Dec 13, 2013

Soil Survey Area: Imperial County, California, Imperial Valley Area
Survey Area Data: Version 8, Sep 12, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

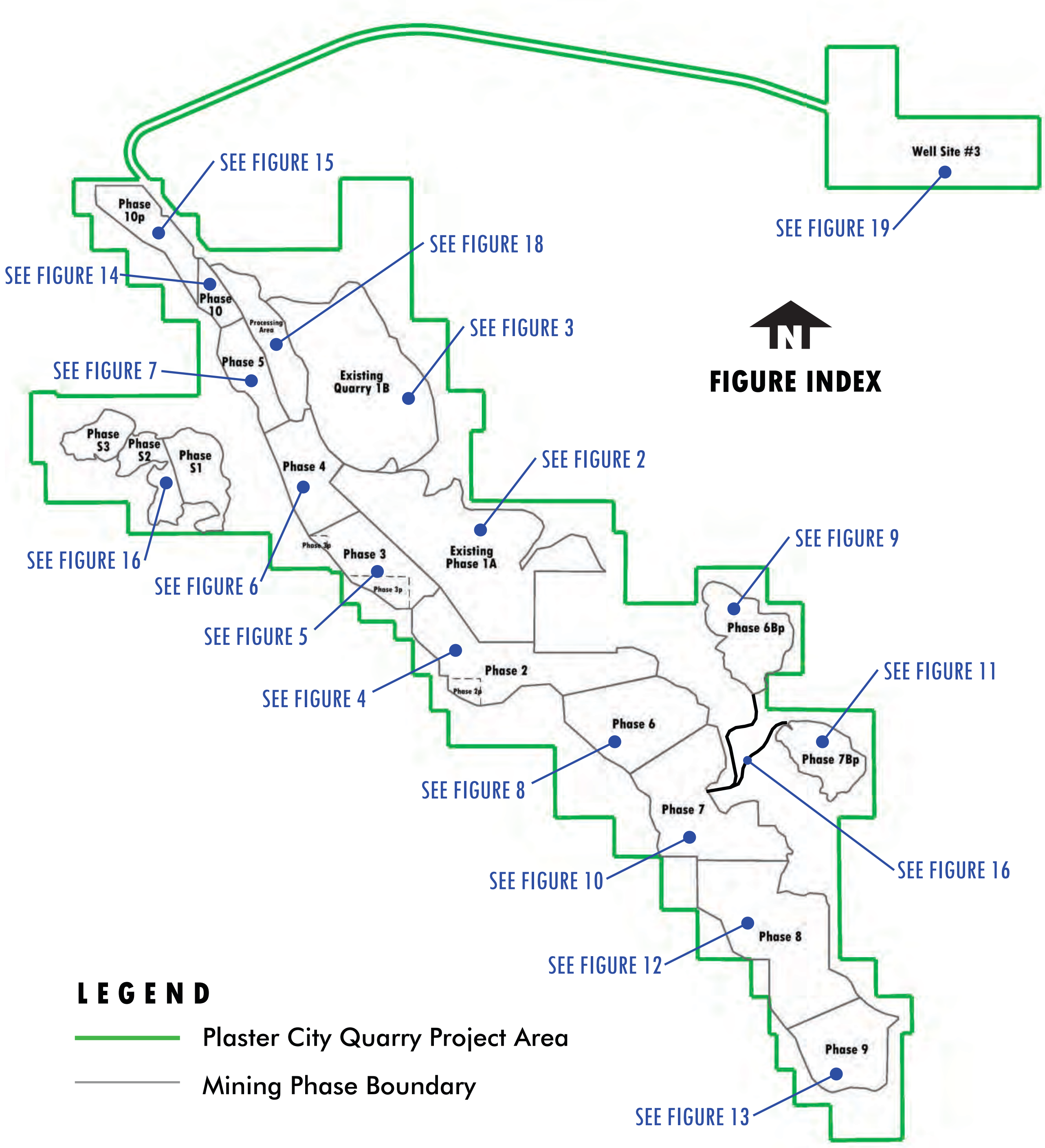
Date(s) aerial images were photographed: May 2, 2010—Jun 3, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Anza-Borrego Area, California (CA804)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
NOTCOM	No Digital Data Available	2,271.7	98.5%
Subtotals for Soil Survey Area		**2,271.7**	**98.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**

Imperial County, California, Imperial Valley Area (CA683)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
119	Indio-Vint complex	6.5	0.3%
137	Rositas silt loam, 0 to 2 percent slopes	27.5	1.2%
Subtotals for Soil Survey Area		**34.0**	**1.5%**
Totals for Area of Interest		**2,305.7**	**100.0%**



PLASTER CITY QUARRY JURISDICTIONAL WATERS IMPACT CALCULATIONS

		50' Wide Quarry Wash Diversion Berm Jurisdictional Water Impacts		Jurisdictional Water Impacts		TOTALS IMPACTS	
		A	B	C	D	E	F
Item	Status	Linear Feet	Acres	Linear Feet	Acres	Linear Feet (A+C)	Acres (B+D)
Phase 1A Quarry	Existing	0	0.000	0	0.000	0	0.00
Phase 1B Quarry	Existing	0	0.000	180	0.030	180	0.03
Processing Area	Existing	0	0.000	0	0.000	0	0.00
Phase 2	Proposed	1520	1.596	10685	25.773	12205	27.37
Phase 2P	Proposed	0	0.000	450	2.100	450	2.10
Phase 3	Proposed	2500	2.869	1000	3.962	3500	6.83
Phase 3P (a)	Proposed	0	0.000	310	1.223	310	1.22
Phase 3P (b)	Proposed	0	0.000	1200	2.097	1200	2.10
Phase 4	Proposed	1450	1.488	2715	20.106	4165	21.59
Phase 5	Proposed	2000	2.202	3000	12.276	5000	14.48
Phase 6	Proposed	350	0.224	20737	7.584	21087	7.81
Phase 6Bp	Proposed	0	0.000	6168	0.935	6168	0.94
Phase 7	Proposed	415	0.265	15766	13.642	16181	13.91
Phase 7Bp	Proposed	0	0.000	0	0.000	0	0.00
Phase 8	Proposed	585	0.447	16280	13.312	16865	13.76
Phase 9	Proposed	795	0.320	8220	2.519	9015	2.84
Phase 10	Proposed	180	0.096	900	1.572	1080	1.67
Phase 10P	Proposed	2840	2.901	5850	13.839	8690	16.74
Phase S1	Existing	0	0.000	145	0.221	145	0.22
Phase S2	Existing	0	0.000	60	0.023	60	0.02
Phase S3	Existing	0	0.000	250	0.056	250	0.06
Haul Road to Phase 6Bp	Proposed	0	0.000	100	0.033	100	0.03
Haul Road to Phase 7Bp	Proposed	0	0.000	735	0.364	735	0.36
Tramroad Easement	Existing	0	0.000	0	0.000	0	0.00
Water Pipeline and Powerline	Proposed	0	0.000	0	0.000	0	0.00
Well Site #3	Existing	0	0.000	72	0.214	72	0.21
	TOTALS	**12,635.00**	**12.408**	**94,823.00**	**121.881**	**107,458.00**	**134.29**

JURISDICTIONAL WATERS IMPACT CALCULATIONS - SUMMARY

SEIS - United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 1

Prepared By (TAG 11/02/16)
LILBURN
CORPORATION

APPENDIX B

NOAA ATLAS 14 PRECIPITATION DATA

NOAA Atlas 14, Volume 6, Version 2
Location name: Borrego Springs, California, US*
Latitude: 33.0031°, Longitude: -116.0718°
Elevation: 536 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.097** (0.081–0.115)	**0.137** (0.116–0.164)	**0.198** (0.166–0.238)	**0.253** (0.211–0.307)	**0.339** (0.272–0.425)	**0.413** (0.325–0.531)	**0.499** (0.382–0.657)	**0.596** (0.443–0.810)	**0.748** (0.532–1.06)	**0.882** (0.604–1.30)
10-min	**0.138** (0.117–0.166)	**0.197** (0.166–0.235)	**0.283** (0.238–0.341)	**0.363** (0.302–0.440)	**0.485** (0.390–0.610)	**0.593** (0.466–0.761)	**0.715** (0.547–0.942)	**0.855** (0.635–1.16)	**1.07** (0.762–1.52)	**1.26** (0.866–1.86)
15-min	**0.167** (0.141–0.200)	**0.238** (0.200–0.285)	**0.343** (0.288–0.412)	**0.438** (0.365–0.532)	**0.587** (0.472–0.737)	**0.717** (0.563–0.921)	**0.864** (0.662–1.14)	**1.03** (0.768–1.41)	**1.30** (0.922–1.84)	**1.53** (1.05–2.25)
30-min	**0.233** (0.197–0.279)	**0.331** (0.279–0.397)	**0.477** (0.401–0.574)	**0.611** (0.509–0.740)	**0.817** (0.657–1.03)	**0.998** (0.785–1.28)	**1.20** (0.922–1.59)	**1.44** (1.07–1.96)	**1.81** (1.28–2.56)	**2.13** (1.46–3.14)
60-min	**0.326** (0.275–0.389)	**0.462** (0.390–0.554)	**0.667** (0.560–0.801)	**0.853** (0.711–1.03)	**1.14** (0.918–1.43)	**1.39** (1.10–1.79)	**1.68** (1.29–2.22)	**2.01** (1.50–2.73)	**2.52** (1.79–3.58)	**2.97** (2.04–4.38)
2-hr	**0.436** (0.368–0.522)	**0.606** (0.511–0.726)	**0.862** (0.724–1.04)	**1.10** (0.913–1.33)	**1.46** (1.18–1.84)	**1.78** (1.40–2.29)	**2.15** (1.65–2.84)	**2.57** (1.91–3.50)	**3.23** (2.30–4.59)	**3.81** (2.61–5.61)
3-hr	**0.503** (0.425–0.602)	**0.694** (0.585–0.832)	**0.981** (0.824–1.18)	**1.25** (1.04–1.51)	**1.66** (1.33–2.08)	**2.02** (1.59–2.59)	**2.43** (1.86–3.21)	**2.91** (2.16–3.95)	**3.65** (2.59–5.18)	**4.30** (2.95–6.33)
6-hr	**0.623** (0.526–0.745)	**0.853** (0.719–1.02)	**1.20** (1.01–1.44)	**1.51** (1.26–1.84)	**2.01** (1.61–2.52)	**2.44** (1.92–3.13)	**2.92** (2.24–3.86)	**3.48** (2.59–4.73)	**4.35** (3.09–6.18)	**5.11** (3.50–7.53)
12-hr	**0.750** (0.633–0.897)	**1.04** (0.879–1.25)	**1.48** (1.24–1.78)	**1.87** (1.56–2.27)	**2.47** (1.99–3.11)	**2.99** (2.35–3.84)	**3.57** (2.74–4.71)	**4.23** (3.14–5.74)	**5.22** (3.71–7.42)	**6.09** (4.17–8.96)
24-hr	**0.923** (0.815–1.07)	**1.31** (1.16–1.52)	**1.88** (1.66–2.19)	**2.39** (2.09–2.80)	**3.16** (2.68–3.81)	**3.81** (3.17–4.68)	**4.53** (3.68–5.70)	**5.34** (4.23–6.89)	**6.56** (4.99–8.80)	**7.60** (5.60–10.5)
2-day	**1.06** (0.935–1.22)	**1.52** (1.34–1.75)	**2.19** (1.92–2.54)	**2.78** (2.43–3.25)	**3.67** (3.11–4.42)	**4.43** (3.68–5.44)	**5.27** (4.27–6.62)	**6.20** (4.91–8.00)	**7.61** (5.79–10.2)	**8.80** (6.49–12.2)
3-day	**1.12** (0.992–1.30)	**1.61** (1.42–1.87)	**2.34** (2.06–2.71)	**2.98** (2.60–3.48)	**3.93** (3.33–4.74)	**4.74** (3.94–5.82)	**5.63** (4.57–7.08)	**6.64** (5.25–8.56)	**8.14** (6.19–10.9)	**9.43** (6.95–13.1)
4-day	**1.18** (1.04–1.36)	**1.70** (1.50–1.96)	**2.46** (2.17–2.86)	**3.14** (2.74–3.67)	**4.15** (3.52–5.01)	**5.01** (4.16–6.15)	**5.95** (4.83–7.48)	**7.01** (5.54–9.04)	**8.59** (6.53–11.5)	**9.94** (7.32–13.8)
7-day	**1.25** (1.10–1.44)	**1.81** (1.60–2.09)	**2.65** (2.33–3.07)	**3.39** (2.96–3.97)	**4.50** (3.81–5.42)	**5.43** (4.51–6.67)	**6.44** (5.23–8.10)	**7.57** (5.98–9.76)	**9.23** (7.02–12.4)	**10.6** (7.83–14.7)
10-day	**1.29** (1.14–1.48)	**1.88** (1.66–2.18)	**2.78** (2.44–3.22)	**3.57** (3.12–4.17)	**4.76** (4.03–5.73)	**5.74** (4.77–7.06)	**6.82** (5.54–8.57)	**8.01** (6.33–10.3)	**9.77** (7.43–13.1)	**11.2** (8.28–15.6)
20-day	**1.39** (1.22–1.60)	**2.07** (1.83–2.40)	**3.12** (2.74–3.61)	**4.05** (3.54–4.73)	**5.46** (4.62–6.58)	**6.64** (5.52–8.16)	**7.92** (6.43–9.96)	**9.33** (7.38–12.0)	**11.4** (8.64–15.2)	**13.0** (9.60–18.0)
30-day	**1.50** (1.32–1.73)	**2.27** (2.00–2.62)	**3.45** (3.04–4.00)	**4.52** (3.95–5.28)	**6.16** (5.21–7.42)	**7.52** (6.24–9.24)	**8.98** (7.29–11.3)	**10.6** (8.36–13.6)	**12.9** (9.78–17.2)	**14.7** (10.8–20.4)
45-day	**1.65** (1.46–1.90)	**2.53** (2.23–2.93)	**3.89** (3.42–4.51)	**5.13** (4.48–5.99)	**7.04** (5.96–8.48)	**8.64** (7.18–10.6)	**10.4** (8.41–13.0)	**12.2** (9.64–15.7)	**14.8** (11.3–19.8)	**16.9** (12.4–23.4)
60-day	**1.78** (1.57–2.05)	**2.76** (2.43–3.19)	**4.28** (3.77–4.97)	**5.68** (4.96–6.64)	**7.80** (6.60–9.40)	**9.59** (7.97–11.8)	**11.5** (9.35–14.5)	**13.5** (10.7–17.4)	**16.4** (12.4–21.9)	**18.6** (13.7–25.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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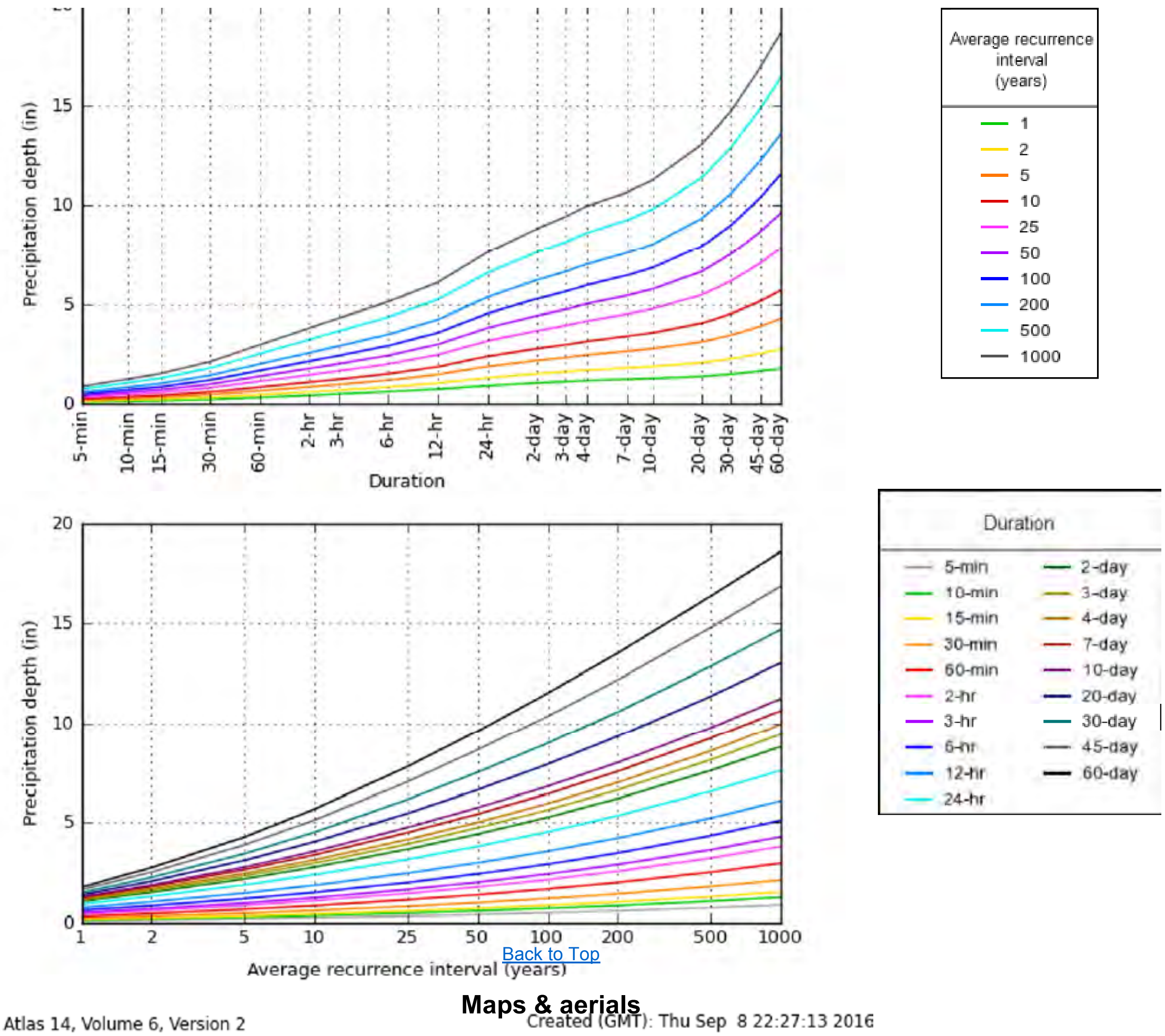
PF graphical



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Thu Sep 8 22:27:13 2016

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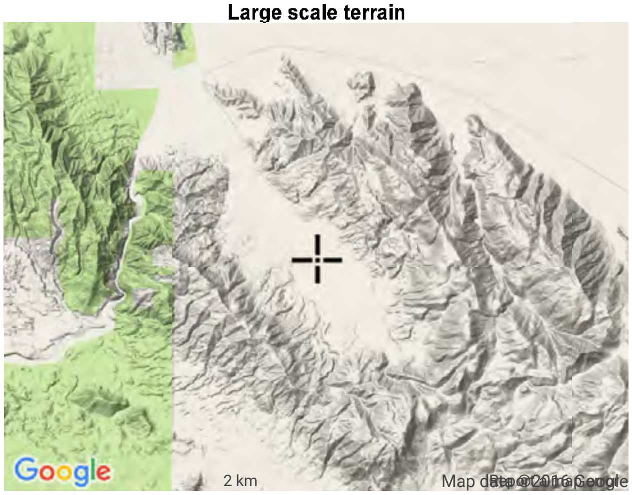
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910

APPENDIX C

AES HYDROLOGY CALCULATIONS

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              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 10YR - 6HR                                                               *
* US GYPSUM - EXISTING CONDITION                                           *
* JN: 9369 - 10/14/16 - JO                                                 *
 **************************************************************************

  FILE NAME: TOTAL100.DAT
  TIME/DATE OF STUDY: 17:57 10/14/2016



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   31605.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16095.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1915.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    7000.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.484 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.50 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9811


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.230



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                1.923              1566.112
        2                7.086              4205.552
        3               15.644              6970.772
        4               28.833             10742.733
        5               40.219              9274.123
        6               47.927              6277.550
        7               53.574              4600.054
        8               57.616              3291.915
        9               61.075              2817.780
       10               64.073              2441.423
       11               66.690              2132.115
       12               69.018              1896.216
       13               71.169              1751.996
       14               73.061              1540.612
       15               74.712              1345.286
       16               76.249              1251.525
       17               77.683              1168.242
       18               78.966              1045.081
       19               80.179               987.923
       20               81.332               939.452
       21               82.389               860.879
       22               83.322               759.226
       23               84.204               718.510
       24               84.974               627.192
       25               85.738               622.854
       26               86.446               576.229
       27               87.122               550.377
       28               87.796               549.172
       29               88.423               511.047
       30               89.028               492.299
       31               89.632               492.485
       32               90.209               469.586
```

```
       33                90.743                435.426
       34                91.278                435.240
       35                91.811                434.320
       36                92.288                388.707
       37                92.733                362.117
       38                93.177                362.117
       39                93.622                362.297
       40                94.045                344.207
       41                94.392                283.264
       42                94.733                277.727
       43                95.075                277.914
       44                95.416                278.094
       45                95.757                277.727
       46                96.069                254.275
       47                96.319                203.678
       48                96.567                201.833
       49                96.815                202.019
       50                97.063                202.013
       51                97.311                201.833
       52                97.559                202.019
       53                97.807                201.646
       54                98.008                163.982
       55                98.083                 60.937
       56                98.150                 55.027
       57                98.218                 55.027
       58                98.285                 55.027
       59                98.353                 55.400
       60                98.420                 54.661
       61                98.488                 55.394
       62                98.556                 55.400
       63                98.624                 54.661
       64                98.692                 55.394
       65                98.759                 54.661
       66                98.827                 55.400
       67                98.895                 55.394
       68                98.962                 54.661
       69                99.030                 55.400
       70                99.097                 54.661
       71                99.164                 54.661
       72                99.231                 54.661
       73                99.298                 54.661
       74                99.365                 54.661
       75                99.433                 54.661
       76                99.500                 54.661
       77                99.567                 54.661
       78                99.634                 54.661
       79                99.701                 54.661
       80                99.768                 54.661
       81                99.835                 54.661
       82                99.902                 54.661
       83                99.969                 54.661
       84               100.000                 24.944


****************************************************************************
         UNIT              UNIT            UNIT              EFFECTIVE
        PERIOD           RAINFALL       SOIL-LOSS            RAINFALL
       (NUMBER)          (INCHES)        (INCHES)            (INCHES)
----------------------------------------------------------------------------
           1             0.0074           0.0066              0.0007
           2             0.0088           0.0079              0.0009
           3             0.0088           0.0079              0.0009
           4             0.0088           0.0079              0.0009
           5             0.0088           0.0079              0.0009
           6             0.0103           0.0093              0.0010
           7             0.0103           0.0093              0.0010
           8             0.0103           0.0093              0.0010
           9             0.0103           0.0093              0.0010
          10             0.0103           0.0093              0.0010
          11             0.0103           0.0093              0.0010
          12             0.0118           0.0106              0.0012
          13             0.0118           0.0106              0.0012
          14             0.0118           0.0106              0.0012
          15             0.0118           0.0106              0.0012
          16             0.0118           0.0106              0.0012
          17             0.0118           0.0106              0.0012
          18             0.0118           0.0106              0.0012
          19             0.0118           0.0106              0.0012
          20             0.0118           0.0106              0.0012
          21             0.0118           0.0106              0.0012
          22             0.0118           0.0106              0.0012
          23             0.0118           0.0106              0.0012
          24             0.0132           0.0119              0.0013
          25             0.0118           0.0106              0.0012
          26             0.0132           0.0119              0.0013
          27             0.0132           0.0119              0.0013
          28             0.0132           0.0119              0.0013
          29             0.0132           0.0119              0.0013
          30             0.0132           0.0119              0.0013
          31             0.0132           0.0119              0.0013
          32             0.0132           0.0119              0.0013
          33             0.0147           0.0132              0.0015
          34             0.0147           0.0132              0.0015
          35             0.0147           0.0132              0.0015
          36             0.0147           0.0132              0.0015
          37             0.0147           0.0132              0.0015
          38             0.0162           0.0146              0.0016
          39             0.0162           0.0146              0.0016
```

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          40             0.0162           0.0146              0.0016
          41             0.0177           0.0159              0.0018
          42             0.0191           0.0172              0.0019
          43             0.0206           0.0185              0.0021
          44             0.0206           0.0185              0.0021
          45             0.0221           0.0196              0.0024
          46             0.0221           0.0196              0.0024
          47             0.0235           0.0196              0.0039
          48             0.0235           0.0196              0.0039
          49             0.0250           0.0196              0.0054
          50             0.0265           0.0196              0.0069
          51             0.0280           0.0196              0.0083
          52             0.0294           0.0196              0.0098
          53             0.0309           0.0196              0.0113
          54             0.0309           0.0196              0.0113
          55             0.0324           0.0196              0.0127
          56             0.0338           0.0196              0.0142
          57             0.0353           0.0196              0.0157
          58             0.0353           0.0196              0.0157
          59             0.0368           0.0196              0.0172
          60             0.0383           0.0196              0.0186
          61             0.0456           0.0196              0.0260
          62             0.0530           0.0196              0.0333
          63             0.0574           0.0196              0.0378
          64             0.0618           0.0196              0.0422
          65             0.0692           0.0196              0.0495
          66             0.0824           0.0196              0.0628
          67             0.0280           0.0196              0.0083
          68             0.0132           0.0119              0.0013
          69             0.0088           0.0079              0.0009
          70             0.0074           0.0066              0.0007
          71             0.0044           0.0040              0.0004
          72             0.0029           0.0026              0.0003

         TOTAL STORM RAINFALL(INCHES) =  1.47
         TOTAL SOIL-LOSS(INCHES) =  0.99
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.48

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     556.7228
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     269.0665
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      550.0    1100.0    1650.0    2200.0
----------------------------------------------------------------------------
   0.083      0.0079      1.15  Q         .         .         .         .
   0.167      0.0388      4.48  Q         .         .         .         .
   0.250      0.1092     10.23  Q         .         .         .         .
   0.333      0.2411     19.16  Q         .         .         .         .
   0.417      0.4309     27.56  Q         .         .         .         .
   0.500      0.6635     33.77  Q         .         .         .         .
   0.583      0.9301     38.70  Q         .         .         .         .
   0.667      1.2250     42.83  Q         .         .         .         .
   0.750      1.5485     46.97  Q         .         .         .         .
   0.833      1.8966     50.54  Q         .         .         .         .
   0.917      2.2643     53.39  Q         .         .         .         .
   1.000      2.6500     56.01  VQ        .         .         .         .
   1.083      3.0541     58.68  VQ        .         .         .         .
   1.167      3.4778     61.51  VQ        .         .         .         .
   1.250      3.9232     64.67  VQ        .         .         .         .
   1.333      4.3878     67.47  VQ        .         .         .         .
   1.417      4.8679     69.71  VQ        .         .         .         .
   1.500      5.3610     71.59  VQ        .         .         .         .
   1.583      5.8650     73.18  VQ        .         .         .         .
   1.667      6.3790     74.63  VQ        .         .         .         .
   1.750      6.9020     75.95  .Q        .         .         .         .
   1.833      7.4331     77.12  .Q        .         .         .         .
   1.917      7.9716     78.19  .Q        .         .         .         .
   2.000      8.5184     79.39  .Q        .         .         .         .
   2.083      9.0741     80.69  .Q        .         .         .         .
   2.167      9.6400     82.17  .Q        .         .         .         .
   2.250     10.2194     84.13  .Q        .         .         .         .
   2.333     10.8097     85.70  .Q        .         .         .         .
   2.417     11.4126     87.55  .Q        .         .         .         .
   2.500     12.0279     89.34  .Q        .         .         .         .
   2.583     12.6528     90.73  .Q        .         .         .         .
   2.667     13.2861     91.96  .Q        .         .         .         .
   2.750     13.9280     93.20  .QV       .         .         .         .
   2.833     14.5806     94.76  .QV       .         .         .         .
   2.917     15.2463     96.65  .QV       .         .         .         .
   3.000     15.9284     99.04  .QV       .         .         .         .
   3.083     16.6249    101.13  .QV       .         .         .         .
   3.167     17.3341    102.98  .QV       .         .         .         .
   3.250     18.0569    104.95  .QV       .         .         .         .
   3.333     18.7945    107.10  .QV       .         .         .         .
   3.417     19.5512    109.88  .QV       .         .         .         .
   3.500     20.3294    112.99  . QV      .         .         .         .
   3.583     21.1325    116.61  . QV      .         .         .         .
   3.667     21.9678    121.29  . QV      .         .         .         .
   3.750     22.8430    127.08  . QV      .         .         .         .
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   3.833     23.7635    133.65  . QV      .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      550.0    1100.0    1650.0    2200.0
----------------------------------------------------------------------------
   3.917     24.7450    142.51  . QV      .         .         .         .
   4.000     25.8176    155.74  . QV      .         .         .         .
   4.083     27.0174    174.22  .  QV     .         .         .         .
   4.167     28.4151    202.94  .  QV     .         .         .         .
   4.250     30.0604    238.90  .   Q     .         .         .         .
   4.333     32.0270    285.56  .   VQ    .         .         .         .
   4.417     34.3900    343.10  .    VQ   .         .         .         .
   4.500     37.1817    405.36  .    V Q  .         .         .         .
   4.583     40.4151    469.49  .     V Q .         .         .         .
   4.667     44.0903    533.64  .     V  Q.         .         .         .
   4.750     48.1936    595.81  .      V  Q         .         .         .
   4.833     52.7455    660.93  .      V  . Q       .         .         .
   4.917     57.7685    729.35  .       V .  Q      .         .         .
   5.000     63.2683    798.56  .        V.   Q     .         .         .
   5.083     69.2985    875.58  .         V    Q    .         .         .
   5.167     76.0633    982.25  .         .V     Q  .         .         .
   5.250     83.8602   1132.10  .         . V       Q         .         .
   5.333     93.0704   1337.33  .         .  V      .   Q     .         .
   5.417    103.9871   1585.10  .         .    V    .       Q .         .
   5.500    116.8113   1862.08  .         .      V  .         .  Q      .
   5.583    131.1382   2080.27  .         .        V.         .      Q  .
   5.667    146.0387   2163.56  .         .         .V        .        Q.
   5.750    160.3640   2080.03  .         .         .  V      .      Q  .
   5.833    172.1211   1707.12  .         .         .    V    .Q        .
   5.917    181.2061   1319.14  .         .         .  Q  V   .         .
   6.000    188.5087   1060.34  .         .        Q.       V .         .
   6.083    194.5977    884.11  .         .     Q   .       V .         .
   6.167    199.9340    774.83  .         .   Q     .        V.         .
   6.250    204.6719    687.94  .         . Q       .         V         .
   6.333    208.9089    615.21  .         .Q        .         .V        .
   6.417    212.7357    555.66  .         Q         .         .V        .
   6.500    216.2195    505.84  .        Q.         .         . V       .
   6.583    219.3849    459.63  .       Q .         .         . V       .
   6.667    222.2849    421.07  .      Q  .         .         .  V      .
   6.750    224.9770    390.90  .      Q  .         .         .  V      .
   6.833    227.4788    363.25  .     Q   .         .         .  V      .
   6.917    229.8000    337.05  .     Q   .         .         .   V     .
   7.000    231.9703    315.13  .    Q    .         .         .   V     .
   7.083    233.9980    294.41  .    Q    .         .         .   V     .
   7.167    235.8845    273.93  .   Q     .         .         .    V    .
   7.250    237.6423    255.23  .   Q     .         .         .    V    .
   7.333    239.3005    240.77  .   Q     .         .         .    V    .
   7.417    240.8656    227.24  .   Q     .         .         .    V    .
   7.500    242.3663    217.91  .  Q      .         .         .     V   .
   7.583    243.7994    208.08  .  Q      .         .         .     V   .
   7.667    245.1755    199.81  .  Q      .         .         .     V   .
   7.750    246.5001    192.34  .  Q      .         .         .     V   .
   7.833    247.7677    184.05  .  Q      .         .         .     V   .
   7.917    248.9868    177.03  .  Q      .         .         .      V  .
   8.000    250.1602    170.38  .  Q      .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      550.0    1100.0    1650.0    2200.0
----------------------------------------------------------------------------
   8.083    251.2798    162.56  . Q       .         .         .      V  .
   8.167    252.3474    155.02  . Q       .         .         .      V  .
   8.250    253.3732    148.95  . Q       .         .         .      V  .
   8.333    254.3537    142.36  . Q       .         .         .      V  .
   8.417    255.2780    134.21  . Q       .         .         .      V  .
   8.500    256.1559    127.47  . Q       .         .         .       V .
   8.583    256.9950    121.84  . Q       .         .         .       V .
   8.667    257.7921    115.75  . Q       .         .         .       V .
   8.750    258.5403    108.64  .Q        .         .         .       V .
   8.833    259.2374    101.22  .Q        .         .         .       V .
   8.917    259.9018     96.47  .Q        .         .         .       V .
   9.000    260.5349     91.93  .Q        .         .         .       V .
   9.083    261.1334     86.90  .Q        .         .         .       V .
   9.167    261.6930     81.26  .Q        .         .         .       V .
   9.250    262.2082     74.80  .Q        .         .         .       V .
   9.333    262.6826     68.89  .Q        .         .         .        V.
   9.417    263.1349     65.68  .Q        .         .         .        V.
   9.500    263.5654     62.50  .Q        .         .         .        V.
   9.583    263.9669     58.31  .Q        .         .         .        V.
   9.667    264.3330     53.15  Q         .         .         .        V.
   9.750    264.6591     47.36  Q         .         .         .        V.
   9.833    264.9402     40.81  Q         .         .         .        V.
   9.917    265.1675     33.00  Q         .         .         .        V.
  10.000    265.3455     25.85  Q         .         .         .        V.
  10.083    265.5141     24.48  Q         .         .         .        V.
  10.167    265.6806     24.18  Q         .         .         .        V.
  10.250    265.8456     23.96  Q         .         .         .        V.
  10.333    266.0093     23.77  Q         .         .         .        V.
  10.417    266.1717     23.58  Q         .         .         .        V.
  10.500    266.3333     23.46  Q         .         .         .        V.
  10.583    266.4940     23.33  Q         .         .         .        V.
  10.667    266.6536     23.18  Q         .         .         .        V.
  10.750    266.8124     23.06  Q         .         .         .        V.
  10.833    266.9698     22.85  Q         .         .         .        V.
  10.917    267.1258     22.65  Q         .         .         .        V.
  11.000    267.2798     22.37  Q         .         .         .        V.
  11.083    267.4313     21.99  Q         .         .         .        V.
  11.167    267.5799     21.57  Q         .         .         .        V.
  11.250    267.7247     21.04  Q         .         .         .        V.
  11.333    267.8656     20.45  Q         .         .         .        V.
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  11.417    268.0022     19.83  Q         .         .         .        V.
  11.500    268.1342     19.17  Q         .         .         .        V.
  11.583    268.2612     18.43  Q         .         .         .        V.
  11.667    268.3825     17.61  Q         .         .         .        V.
  11.750    268.4979     16.75  Q         .         .         .        V.
  11.833    268.6071     15.85  Q         .         .         .        V.
  11.917    268.7095     14.87  Q         .         .         .        V.
  12.000    268.8034     13.63  Q         .         .         .        V.
  12.083    268.8860     12.00  Q         .         .         .        V.
  12.167    268.9551     10.04  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      550.0    1100.0    1650.0    2200.0
 ----------------------------------------------------------------------------
  12.250    269.0092      7.85  Q         .         .         .        V.
  12.333    269.0458      5.32  Q         .         .         .        V.
  12.417    269.0611      2.22  Q         .         .         .        V.
  12.500    269.0639      0.41  Q         .         .         .        V.
  12.583    269.0650      0.16  Q         .         .         .        V.
  12.667    269.0657      0.10  Q         .         .         .        V.
  12.750    269.0661      0.06  Q         .         .         .        V.
  12.833    269.0663      0.03  Q         .         .         .        V.
  12.917    269.0664      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
              0%                              775.0
             10%                              200.0
             20%                              125.0
             30%                               90.0
             40%                               65.0
             50%                               45.0
             60%                               40.0
             70%                               30.0
             80%                               20.0
             90%                               15.0
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   END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* 5YR - 6HR                                                                *
* US GYPSUM - EXISTING CONDITION                                           *
* JN: 9369 - 10/14/16 - JO                                                 *
 **************************************************************************

  FILE NAME: TOTAL100.DAT
  TIME/DATE OF STUDY: 18:14 10/14/2016



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   31605.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16095.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1915.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    7000.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.484 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.19 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9811


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.230



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.923              1566.112
        2                 7.086              4205.552
        3                15.644              6970.772
        4                28.833             10742.733
        5                40.219              9274.123
        6                47.927              6277.550
        7                53.574              4600.054
        8                57.616              3291.915
        9                61.075              2817.780
       10                64.073              2441.423
       11                66.690              2132.115
       12                69.018              1896.216
       13                71.169              1751.996
       14                73.061              1540.612
       15                74.712              1345.286
       16                76.249              1251.525
       17                77.683              1168.242
       18                78.966              1045.081
       19                80.179               987.923
       20                81.332               939.452
       21                82.389               860.879
       22                83.322               759.226
       23                84.204               718.510
       24                84.974               627.192
       25                85.738               622.854
       26                86.446               576.229
       27                87.122               550.377
       28                87.796               549.172
       29                88.423               511.047
       30                89.028               492.299
       31                89.632               492.485
       32                90.209               469.586
```

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      33                90.743               435.426
      34                91.278               435.240
      35                91.811               434.320
      36                92.288               388.707
      37                92.733               362.117
      38                93.177               362.117
      39                93.622               362.297
      40                94.045               344.207
      41                94.392               283.264
      42                94.733               277.727
      43                95.075               277.914
      44                95.416               278.094
      45                95.757               277.727
      46                96.069               254.275
      47                96.319               203.678
      48                96.567               201.833
      49                96.815               202.019
      50                97.063               202.013
      51                97.311               201.833
      52                97.559               202.019
      53                97.807               201.646
      54                98.008               163.982
      55                98.083                60.937
      56                98.150                55.027
      57                98.218                55.027
      58                98.285                55.027
      59                98.353                55.400
      60                98.420                54.661
      61                98.488                55.394
      62                98.556                55.400
      63                98.624                54.661
      64                98.692                55.394
      65                98.759                54.661
      66                98.827                55.400
      67                98.895                55.394
      68                98.962                54.661
      69                99.030                55.400
      70                99.097                54.661
      71                99.164                54.661
      72                99.231                54.661
      73                99.298                54.661
      74                99.365                54.661
      75                99.433                54.661
      76                99.500                54.661
      77                99.567                54.661
      78                99.634                54.661
      79                99.701                54.661
      80                99.768                54.661
      81                99.835                54.661
      82                99.902                54.661
      83                99.969                54.661
      84               100.000                24.944


****************************************************************************
         UNIT              UNIT            UNIT               EFFECTIVE
        PERIOD           RAINFALL        SOIL-LOSS             RAINFALL
       (NUMBER)          (INCHES)         (INCHES)             (INCHES)
----------------------------------------------------------------------------
            1             0.0058          0.0053               0.0006
            2             0.0070          0.0063               0.0007
            3             0.0070          0.0063               0.0007
            4             0.0070          0.0063               0.0007
            5             0.0070          0.0063               0.0007
            6             0.0082          0.0074               0.0008
            7             0.0082          0.0074               0.0008
            8             0.0082          0.0074               0.0008
            9             0.0082          0.0074               0.0008
           10             0.0082          0.0074               0.0008
           11             0.0082          0.0074               0.0008
           12             0.0093          0.0084               0.0009
           13             0.0093          0.0084               0.0009
           14             0.0093          0.0084               0.0009
           15             0.0093          0.0084               0.0009
           16             0.0093          0.0084               0.0009
           17             0.0093          0.0084               0.0009
           18             0.0093          0.0084               0.0009
           19             0.0093          0.0084               0.0009
           20             0.0093          0.0084               0.0009
           21             0.0093          0.0084               0.0009
           22             0.0093          0.0084               0.0009
           23             0.0093          0.0084               0.0009
           24             0.0105          0.0095               0.0011
           25             0.0093          0.0084               0.0009
           26             0.0105          0.0095               0.0011
           27             0.0105          0.0095               0.0011
           28             0.0105          0.0095               0.0011
           29             0.0105          0.0095               0.0011
           30             0.0105          0.0095               0.0011
           31             0.0105          0.0095               0.0011
           32             0.0105          0.0095               0.0011
           33             0.0117          0.0105               0.0012
           34             0.0117          0.0105               0.0012
           35             0.0117          0.0105               0.0012
           36             0.0117          0.0105               0.0012
           37             0.0117          0.0105               0.0012
           38             0.0128          0.0116               0.0013
           39             0.0128          0.0116               0.0013
```

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          40            0.0128          0.0116             0.0013
          41            0.0140          0.0126             0.0014
          42            0.0152          0.0137             0.0015
          43            0.0163          0.0147             0.0016
          44            0.0163          0.0147             0.0016
          45            0.0175          0.0158             0.0018
          46            0.0175          0.0158             0.0018
          47            0.0187          0.0168             0.0019
          48            0.0187          0.0168             0.0019
          49            0.0198          0.0179             0.0020
          50            0.0210          0.0189             0.0021
          51            0.0222          0.0196             0.0025
          52            0.0233          0.0196             0.0037
          53            0.0245          0.0196             0.0049
          54            0.0245          0.0196             0.0049
          55            0.0257          0.0196             0.0061
          56            0.0269          0.0196             0.0072
          57            0.0280          0.0196             0.0084
          58            0.0280          0.0196             0.0084
          59            0.0292          0.0196             0.0096
          60            0.0304          0.0196             0.0107
          61            0.0362          0.0196             0.0166
          62            0.0420          0.0196             0.0224
          63            0.0455          0.0196             0.0259
          64            0.0490          0.0196             0.0294
          65            0.0549          0.0196             0.0352
          66            0.0654          0.0196             0.0457
          67            0.0222          0.0196             0.0025
          68            0.0105          0.0095             0.0011
          69            0.0070          0.0063             0.0007
          70            0.0058          0.0053             0.0006
          71            0.0035          0.0032             0.0004
          72            0.0023          0.0021             0.0002

         TOTAL STORM RAINFALL(INCHES) =  1.17
         TOTAL SOIL-LOSS(INCHES) =  0.86
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.30

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     485.1316
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     170.0170
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
              HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      375.0     750.0    1125.0    1500.0
----------------------------------------------------------------------------
   0.083      0.0063      0.91  Q         .         .         .         .
   0.167      0.0308      3.55  Q         .         .         .         .
   0.250      0.0866      8.11  Q         .         .         .         .
   0.333      0.1913     15.20  Q         .         .         .         .
   0.417      0.3419     21.86  Q         .         .         .         .
   0.500      0.5264     26.79  Q         .         .         .         .
   0.583      0.7379     30.70  Q         .         .         .         .
   0.667      0.9718     33.98  Q         .         .         .         .
   0.750      1.2285     37.26  Q         .         .         .         .
   0.833      1.5046     40.10  VQ        .         .         .         .
   0.917      1.7963     42.36  VQ        .         .         .         .
   1.000      2.1023     44.43  VQ        .         .         .         .
   1.083      2.4230     46.55  VQ        .         .         .         .
   1.167      2.7590     48.80  VQ        .         .         .         .
   1.250      3.1124     51.30  VQ        .         .         .         .
   1.333      3.4810     53.52  VQ        .         .         .         .
   1.417      3.8619     55.31  VQ        .         .         .         .
   1.500      4.2530     56.79  .Q        .         .         .         .
   1.583      4.6529     58.06  .Q        .         .         .         .
   1.667      5.0606     59.21  .Q        .         .         .         .
   1.750      5.4756     60.25  .Q        .         .         .         .
   1.833      5.8969     61.18  .Q        .         .         .         .
   1.917      6.3241     62.03  .Q        .         .         .         .
   2.000      6.7579     62.98  .Q        .         .         .         .
   2.083      7.1988     64.02  .Q        .         .         .         .
   2.167      7.6478     65.19  .Q        .         .         .         .
   2.250      8.1074     66.74  .Q        .         .         .         .
   2.333      8.5757     67.99  .QV       .         .         .         .
   2.417      9.0540     69.45  .QV       .         .         .         .
   2.500      9.5422     70.88  .QV       .         .         .         .
   2.583     10.0379     71.98  .QV       .         .         .         .
   2.667     10.5403     72.96  .QV       .         .         .         .
   2.750     11.0496     73.94  .QV       .         .         .         .
   2.833     11.5673     75.17  . Q       .         .         .         .
   2.917     12.0954     76.68  . Q       .         .         .         .
   3.000     12.6365     78.57  . Q       .         .         .         .
   3.083     13.1891     80.23  . QV      .         .         .         .
   3.167     13.7517     81.70  . QV      .         .         .         .
   3.250     14.3252     83.26  . QV      .         .         .         .
   3.333     14.9103     84.96  . QV      .         .         .         .
   3.417     15.5106     87.17  . QV      .         .         .         .
   3.500     16.1280     89.64  . QV      .         .         .         .
   3.583     16.7651     92.51  . QV      .         .         .         .
   3.667     17.4278     96.22  . Q V     .         .         .         .
   3.750     18.1202    100.53  . Q V     .         .         .         .
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   3.833     18.8430    104.96  . Q V     .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      375.0     750.0    1125.0    1500.0
----------------------------------------------------------------------------
   3.917     19.5941    109.06  . Q V     .         .         .         .
   4.000     20.3734    113.15  .  QV     .         .         .         .
   4.083     21.1800    117.12  .  QV     .         .         .         .
   4.167     22.0160    121.39  .  Q V    .         .         .         .
   4.250     22.8869    126.45  .  Q V    .         .         .         .
   4.333     23.8141    134.63  .  Q V    .         .         .         .
   4.417     24.8393    148.86  .  Q V    .         .         .         .
   4.500     26.0120    170.26  .   Q V   .         .         .         .
   4.583     27.3871    199.68  .    QV   .         .         .         .
   4.667     29.0045    234.84  .     Q   .         .         .         .
   4.750     30.8768    271.86  .      Q  .         .         .         .
   4.833     33.0349    313.35  .      VQ .         .         .         .
   4.917     35.5053    358.70  .       VQ.         .         .         .
   5.000     38.2999    405.77  .        VQ         .         .         .
   5.083     41.4670    459.87  .        V. Q       .         .         .
   5.167     45.1734    538.17  .         V   Q     .         .         .
   5.250     49.6593    651.34  .         .V     Q  .         .         .
   5.333     55.2312    809.05  .         . V       .Q        .         .
   5.417     62.1244   1000.90  .         .   V     .     Q   .         .
   5.500     70.5010   1216.28  .         .     V   .         . Q       .
   5.583     80.0421   1385.37  .         .       V .         .     Q   .
   5.667     90.0566   1454.10  .         .         .V        .       Q .
   5.750     99.7084   1401.43  .         .         .  V      .      Q  .
   5.833    107.4958   1130.73  .         .         .    V    Q         .
   5.917    113.4434    863.59  .         .         .  Q  V   .         .
   6.000    118.2177    693.23  .         .       Q .      V  .         .
   6.083    122.1874    576.40  .         .    Q    .       V .         .
   6.167    125.6722    505.99  .         .  Q      .        V.         .
   6.250    128.7586    448.15  .         .Q        .         V         .
   6.333    131.5114    399.71  .         Q         .         V         .
   6.417    133.9926    360.26  .        Q.         .         .V        .
   6.500    136.2471    327.36  .       Q .         .         . V       .
   6.583    138.2889    296.46  .      Q  .         .         . V       .
   6.667    140.1558    271.08  .      Q  .         .         . V       .
   6.750    141.8884    251.57  .     Q   .         .         .  V      .
   6.833    143.4956    233.37  .     Q   .         .         .  V      .
   6.917    144.9831    215.98  .    Q    .         .         .   V     .
   7.000    146.3723    201.71  .    Q    .         .         .   V     .
   7.083    147.6669    187.98  .    Q    .         .         .   V     .
   7.167    148.8672    174.28  .   Q     .         .         .    V    .
   7.250    149.9822    161.89  .   Q     .         .         .    V    .
   7.333    151.0329    152.57  .   Q     .         .         .    V    .
   7.417    152.0222    143.65  .  Q      .         .         .    V    .
   7.500    152.9725    137.99  .  Q      .         .         .    V    .
   7.583    153.8790    131.61  .  Q      .         .         .     V   .
   7.667    154.7501    126.49  .  Q      .         .         .     V   .
   7.750    155.5894    121.86  .  Q      .         .         .     V   .
   7.833    156.3919    116.51  .  Q      .         .         .     V   .
   7.917    157.1649    112.24  . Q       .         .         .     V   .
   8.000    157.9099    108.18  . Q       .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      375.0     750.0    1125.0    1500.0
----------------------------------------------------------------------------
   8.083    158.6204    103.16  . Q       .         .         .      V  .
   8.167    159.2978     98.36  . Q       .         .         .      V  .
   8.250    159.9497     94.66  . Q       .         .         .      V  .
   8.333    160.5726     90.44  . Q       .         .         .      V  .
   8.417    161.1587     85.10  . Q       .         .         .      V  .
   8.500    161.7159     80.92  . Q       .         .         .       V .
   8.583    162.2502     77.58  . Q       .         .         .       V .
   8.667    162.7592     73.91  .Q        .         .         .       V .
   8.750    163.2379     69.51  .Q        .         .         .       V .
   8.833    163.6847     64.87  .Q        .         .         .       V .
   8.917    164.1136     62.28  .Q        .         .         .       V .
   9.000    164.5240     59.60  .Q        .         .         .       V .
   9.083    164.9132     56.51  .Q        .         .         .       V .
   9.167    165.2778     52.94  .Q        .         .         .       V .
   9.250    165.6133     48.72  .Q        .         .         .       V .
   9.333    165.9228     44.93  .Q        .         .         .        V.
   9.417    166.2203     43.20  .Q        .         .         .        V.
   9.500    166.5046     41.28  .Q        .         .         .        V.
   9.583    166.7700     38.55  .Q        .         .         .        V.
   9.667    167.0115     35.05  Q         .         .         .        V.
   9.750    167.2253     31.05  Q         .         .         .        V.
   9.833    167.4075     26.45  Q         .         .         .        V.
   9.917    167.5512     20.86  Q         .         .         .        V.
  10.000    167.6598     15.78  Q         .         .         .        V.
  10.083    167.7641     15.14  Q         .         .         .        V.
  10.167    167.8669     14.92  Q         .         .         .        V.
  10.250    167.9684     14.75  Q         .         .         .        V.
  10.333    168.0690     14.60  Q         .         .         .        V.
  10.417    168.1686     14.45  Q         .         .         .        V.
  10.500    168.2675     14.36  Q         .         .         .        V.
  10.583    168.3657     14.26  Q         .         .         .        V.
  10.667    168.4631     14.14  Q         .         .         .        V.
  10.750    168.5599     14.06  Q         .         .         .        V.
  10.833    168.6559     13.94  Q         .         .         .        V.
  10.917    168.7514     13.85  Q         .         .         .        V.
  11.000    168.8459     13.73  Q         .         .         .        V.
  11.083    168.9395     13.59  Q         .         .         .        V.
  11.167    169.0322     13.46  Q         .         .         .        V.
  11.250    169.1235     13.26  Q         .         .         .        V.
  11.333    169.2131     13.02  Q         .         .         .        V.
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   11.417    169.3009     12.75  Q         .         .         .        V.
   11.500    169.3867     12.45  Q         .         .         .        V.
   11.583    169.4699     12.08  Q         .         .         .        V.
   11.667    169.5501     11.65  Q         .         .         .        V.
   11.750    169.6272     11.19  Q         .         .         .        V.
   11.833    169.7009     10.70  Q         .         .         .        V.
   11.917    169.7708     10.14  Q         .         .         .        V.
   12.000    169.8354      9.39  Q         .         .         .        V.
   12.083    169.8926      8.31  Q         .         .         .        V.
   12.167    169.9407      6.98  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      375.0     750.0    1125.0    1500.0
 ----------------------------------------------------------------------------
   12.250    169.9783      5.46  Q         .         .         .        V.
   12.333    170.0036      3.68  Q         .         .         .        V.
   12.417    170.0135      1.44  Q         .         .         .        V.
   12.500    170.0151      0.22  Q         .         .         .        V.
   12.583    170.0160      0.13  Q         .         .         .        V.
   12.667    170.0165      0.08  Q         .         .         .        V.
   12.750    170.0169      0.05  Q         .         .         .        V.
   12.833    170.0170      0.02  Q         .         .         .        V.
   12.917    170.0171      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
               0%                             775.0
              10%                             180.0
              20%                             110.0
              30%                              75.0
              40%                              50.0
              50%                              40.0
              60%                              30.0
              70%                              25.0
              80%                              20.0
              90%                              15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:






 ************************** DESCRIPTION OF STUDY **************************
* 2YR - 6 HR                                                               *
* US GYPSUM - EXISTING CONDITION                                           *
* JN: 9369 - 10/14/16 - JO                                                 *
 **************************************************************************

  FILE NAME: TOTAL100.DAT
  TIME/DATE OF STUDY: 18:24 10/14/2016



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   31605.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16095.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1915.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    7000.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.484 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  0.85 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9811


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.230



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                1.923               1566.112
        2                7.086               4205.552
        3               15.644               6970.772
        4               28.833              10742.733
        5               40.219               9274.123
        6               47.927               6277.550
        7               53.574               4600.054
        8               57.616               3291.915
        9               61.075               2817.780
       10               64.073               2441.423
       11               66.690               2132.115
       12               69.018               1896.216
       13               71.169               1751.996
       14               73.061               1540.612
       15               74.712               1345.286
       16               76.249               1251.525
       17               77.683               1168.242
       18               78.966               1045.081
       19               80.179                987.923
       20               81.332                939.452
       21               82.389                860.879
       22               83.322                759.226
       23               84.204                718.510
       24               84.974                627.192
       25               85.738                622.854
       26               86.446                576.229
       27               87.122                550.377
       28               87.796                549.172
       29               88.423                511.047
       30               89.028                492.299
       31               89.632                492.485
       32               90.209                469.586
```

```
       33                90.743                435.426
       34                91.278                435.240
       35                91.811                434.320
       36                92.288                388.707
       37                92.733                362.117
       38                93.177                362.117
       39                93.622                362.297
       40                94.045                344.207
       41                94.392                283.264
       42                94.733                277.727
       43                95.075                277.914
       44                95.416                278.094
       45                95.757                277.727
       46                96.069                254.275
       47                96.319                203.678
       48                96.567                201.833
       49                96.815                202.019
       50                97.063                202.013
       51                97.311                201.833
       52                97.559                202.019
       53                97.807                201.646
       54                98.008                163.982
       55                98.083                 60.937
       56                98.150                 55.027
       57                98.218                 55.027
       58                98.285                 55.027
       59                98.353                 55.400
       60                98.420                 54.661
       61                98.488                 55.394
       62                98.556                 55.400
       63                98.624                 54.661
       64                98.692                 55.394
       65                98.759                 54.661
       66                98.827                 55.400
       67                98.895                 55.394
       68                98.962                 54.661
       69                99.030                 55.400
       70                99.097                 54.661
       71                99.164                 54.661
       72                99.231                 54.661
       73                99.298                 54.661
       74                99.365                 54.661
       75                99.433                 54.661
       76                99.500                 54.661
       77                99.567                 54.661
       78                99.634                 54.661
       79                99.701                 54.661
       80                99.768                 54.661
       81                99.835                 54.661
       82                99.902                 54.661
       83                99.969                 54.661
       84               100.000                 24.944


****************************************************************************
         UNIT              UNIT           UNIT              EFFECTIVE
        PERIOD           RAINFALL       SOIL-LOSS           RAINFALL
       (NUMBER)          (INCHES)        (INCHES)           (INCHES)
----------------------------------------------------------------------------
           1             0.0041           0.0037             0.0004
           2             0.0050           0.0045             0.0005
           3             0.0050           0.0045             0.0005
           4             0.0050           0.0045             0.0005
           5             0.0050           0.0045             0.0005
           6             0.0058           0.0052             0.0006
           7             0.0058           0.0052             0.0006
           8             0.0058           0.0052             0.0006
           9             0.0058           0.0052             0.0006
          10             0.0058           0.0052             0.0006
          11             0.0058           0.0052             0.0006
          12             0.0066           0.0060             0.0007
          13             0.0066           0.0060             0.0007
          14             0.0066           0.0060             0.0007
          15             0.0066           0.0060             0.0007
          16             0.0066           0.0060             0.0007
          17             0.0066           0.0060             0.0007
          18             0.0066           0.0060             0.0007
          19             0.0066           0.0060             0.0007
          20             0.0066           0.0060             0.0007
          21             0.0066           0.0060             0.0007
          22             0.0066           0.0060             0.0007
          23             0.0066           0.0060             0.0007
          24             0.0075           0.0067             0.0007
          25             0.0066           0.0060             0.0007
          26             0.0075           0.0067             0.0007
          27             0.0075           0.0067             0.0007
          28             0.0075           0.0067             0.0007
          29             0.0075           0.0067             0.0007
          30             0.0075           0.0067             0.0007
          31             0.0075           0.0067             0.0007
          32             0.0075           0.0067             0.0007
          33             0.0083           0.0075             0.0008
          34             0.0083           0.0075             0.0008
          35             0.0083           0.0075             0.0008
          36             0.0083           0.0075             0.0008
          37             0.0083           0.0075             0.0008
          38             0.0091           0.0082             0.0009
          39             0.0091           0.0082             0.0009
```

```
          40             0.0091           0.0082              0.0009
          41             0.0099           0.0090              0.0010
          42             0.0108           0.0097              0.0011
          43             0.0116           0.0104              0.0012
          44             0.0116           0.0104              0.0012
          45             0.0124           0.0112              0.0012
          46             0.0124           0.0112              0.0012
          47             0.0133           0.0119              0.0013
          48             0.0133           0.0119              0.0013
          49             0.0141           0.0127              0.0014
          50             0.0149           0.0134              0.0015
          51             0.0158           0.0142              0.0016
          52             0.0166           0.0149              0.0017
          53             0.0174           0.0157              0.0017
          54             0.0174           0.0157              0.0017
          55             0.0182           0.0164              0.0018
          56             0.0191           0.0172              0.0019
          57             0.0199           0.0179              0.0020
          58             0.0199           0.0179              0.0020
          59             0.0207           0.0187              0.0021
          60             0.0216           0.0194              0.0022
          61             0.0257           0.0196              0.0061
          62             0.0298           0.0196              0.0102
          63             0.0323           0.0196              0.0127
          64             0.0348           0.0196              0.0152
          65             0.0390           0.0196              0.0193
          66             0.0464           0.0196              0.0268
          67             0.0158           0.0142              0.0016
          68             0.0075           0.0067              0.0007
          69             0.0050           0.0045              0.0005
          70             0.0041           0.0037              0.0004
          71             0.0025           0.0022              0.0002
          72             0.0017           0.0015              0.0002

         TOTAL STORM RAINFALL(INCHES) =  0.83
         TOTAL SOIL-LOSS(INCHES) =  0.68
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.15

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     379.7557
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      85.4730
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      200.0     400.0     600.0     800.0
----------------------------------------------------------------------------
   0.083      0.0045      0.65  Q         .         .         .         .
   0.167      0.0218      2.52  Q         .         .         .         .
   0.250      0.0615      5.76  Q         .         .         .         .
   0.333      0.1358     10.79  Q         .         .         .         .
   0.417      0.2428     15.53  Q         .         .         .         .
   0.500      0.3738     19.03  Q         .         .         .         .
   0.583      0.5239     21.80  VQ        .         .         .         .
   0.667      0.6901     24.13  VQ        .         .         .         .
   0.750      0.8723     26.46  VQ        .         .         .         .
   0.833      1.0684     28.47  VQ        .         .         .         .
   0.917      1.2755     30.08  VQ        .         .         .         .
   1.000      1.4928     31.55  VQ        .         .         .         .
   1.083      1.7205     33.06  VQ        .         .         .         .
   1.167      1.9592     34.65  VQ        .         .         .         .
   1.250      2.2101     36.43  .Q        .         .         .         .
   1.333      2.4718     38.01  .Q        .         .         .         .
   1.417      2.7423     39.27  .Q        .         .         .         .
   1.500      3.0200     40.33  .VQ       .         .         .         .
   1.583      3.3039     41.23  .VQ       .         .         .         .
   1.667      3.5935     42.04  .VQ       .         .         .         .
   1.750      3.8881     42.78  .VQ       .         .         .         .
   1.833      4.1873     43.44  .VQ       .         .         .         .
   1.917      4.4907     44.05  . Q       .         .         .         .
   2.000      4.7987     44.72  . Q       .         .         .         .
   2.083      5.1117     45.46  . Q       .         .         .         .
   2.167      5.4305     46.29  . Q       .         .         .         .
   2.250      5.7570     47.39  . Q       .         .         .         .
   2.333      6.0895     48.28  . Q       .         .         .         .
   2.417      6.4291     49.32  . QV      .         .         .         .
   2.500      6.7757     50.33  . QV      .         .         .         .
   2.583      7.1277     51.11  . QV      .         .         .         .
   2.667      7.4845     51.80  . QV      .         .         .         .
   2.750      7.8461     52.50  . QV      .         .         .         .
   2.833      8.2137     53.38  . QV      .         .         .         .
   2.917      8.5887     54.45  . Q V     .         .         .         .
   3.000      8.9730     55.79  . Q V     .         .         .         .
   3.083      9.3653     56.97  . Q V     .         .         .         .
   3.167      9.7649     58.01  . Q V     .         .         .         .
   3.250     10.1721     59.12  . Q V     .         .         .         .
   3.333     10.5876     60.33  .  QV     .         .         .         .
   3.417     11.0139     61.90  .  Q V    .         .         .         .
   3.500     11.4522     63.65  .  Q V    .         .         .         .
   3.583     11.9046     65.69  .  Q V    .         .         .         .
   3.667     12.3752     68.33  .  Q V    .         .         .         .
   3.750     12.8668     71.38  .  Q  V   .         .         .         .
```

```
   3.833     13.3801     74.53  .  Q  V   .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      200.0     400.0     600.0     800.0
----------------------------------------------------------------------------
   3.917     13.9135     77.44  .  Q  V   .         .         .         .
   4.000     14.4668     80.35  .   Q V   .         .         .         .
   4.083     15.0396     83.17  .   Q  V  .         .         .         .
   4.167     15.6332     86.20  .   Q  V  .         .         .         .
   4.250     16.2491     89.43  .   Q  V  .         .         .         .
   4.333     16.8901     93.07  .   Q  V  .         .         .         .
   4.417     17.5598     97.24  .   Q   V .         .         .         .
   4.500     18.2594    101.58  .    Q  V .         .         .         .
   4.583     18.9888    105.91  .    Q  V .         .         .         .
   4.667     19.7475    110.16  .    Q   V.         .         .         .
   4.750     20.5345    114.27  .    Q   V.         .         .         .
   4.833     21.3505    118.48  .    Q   V.         .         .         .
   4.917     22.1965    122.84  .     Q   V         .         .         .
   5.000     23.0725    127.20  .     Q   V         .         .         .
   5.083     24.0192    137.45  .     Q   .V        .         .         .
   5.167     25.1515    164.42  .       Q .V        .         .         .
   5.250     26.6446    216.80  .         Q V       .         .         .
   5.333     28.7465    305.20  .         .  V Q    .         .         .
   5.417     31.6587    422.85  .         .   V     .Q        .         .
   5.500     35.5234    561.15  .         .     V   .       Q .         .
   5.583     40.1900    677.60  .         .       V .         .  Q      .
   5.667     45.2803    739.11  .         .         .V        .     Q   .
   5.750     50.3169    731.32  .         .         .  V      .     Q   .
   5.833     54.3869    590.96  .         .         .    V   Q.         .
   5.917     57.4635    446.73  .         .         . Q   V   .         .
   6.000     59.9097    355.19  .         .      Q  .       V .         .
   6.083     61.9240    292.47  .         .   Q     .       V .         .
   6.167     63.6854    255.75  .         . Q       .        V.         .
   6.250     65.2383    225.48  .         .Q        .         V         .
   6.333     66.6167    200.15  .         Q         .         .V        .
   6.417     67.8548    179.78  .       Q .         .         .V        .
   6.500     68.9777    163.05  .       Q .         .         . V       .
   6.583     69.9910    147.13  .      Q  .         .         . V       .
   6.667     70.9154    134.22  .     Q   .         .         .  V      .
   6.750     71.7735    124.60  .     Q   .         .         .  V      .
   6.833     72.5693    115.54  .    Q    .         .         .  V      .
   6.917     73.3044    106.74  .    Q    .         .         .   V     .
   7.000     73.9904     99.61  .   Q     .         .         .   V     .
   7.083     74.6284     92.64  .   Q     .         .         .   V     .
   7.167     75.2172     85.49  .   Q     .         .         .    V    .
   7.250     75.7610     78.95  .  Q      .         .         .    V    .
   7.333     76.2717     74.15  .  Q      .         .         .    V    .
   7.417     76.7501     69.47  .  Q      .         .         .    V    .
   7.500     77.2091     66.64  .  Q      .         .         .     V   .
   7.583     77.6456     63.39  .  Q      .         .         .     V   .
   7.667     78.0653     60.93  .  Q      .         .         .     V   .
   7.750     78.4697     58.73  . Q       .         .         .     V   .
   7.833     78.8559     56.07  . Q       .         .         .     V   .
   7.917     79.2283     54.07  . Q       .         .         .      V  .
   8.000     79.5878     52.21  . Q       .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      200.0     400.0     600.0     800.0
----------------------------------------------------------------------------
   8.083     79.9305     49.75  . Q       .         .         .      V  .
   8.167     80.2569     47.40  . Q       .         .         .      V  .
   8.250     80.5719     45.73  . Q       .         .         .      V  .
   8.333     80.8733     43.77  . Q       .         .         .      V  .
   8.417     81.1561     41.06  . Q       .         .         .      V  .
   8.500     81.4247     39.00  .Q        .         .         .       V .
   8.583     81.6823     37.41  .Q        .         .         .       V .
   8.667     81.9276     35.61  .Q        .         .         .       V .
   8.750     82.1576     33.40  .Q        .         .         .       V .
   8.833     82.3716     31.08  .Q        .         .         .       V .
   8.917     82.5780     29.96  .Q        .         .         .       V .
   9.000     82.7762     28.78  .Q        .         .         .       V .
   9.083     82.9649     27.41  .Q        .         .         .       V .
   9.167     83.1426     25.80  .Q        .         .         .       V .
   9.250     83.3066     23.81  .Q        .         .         .       V .
   9.333     83.4583     22.04  .Q        .         .         .        V.
   9.417     83.6067     21.54  .Q        .         .         .        V.
   9.500     83.7512     20.99  .Q        .         .         .        V.
   9.583     83.8881     19.88  Q         .         .         .        V.
   9.667     84.0137     18.24  Q         .         .         .        V.
   9.750     84.1255     16.23  Q         .         .         .        V.
   9.833     84.2205     13.80  Q         .         .         .        V.
   9.917     84.2940     10.66  Q         .         .         .        V.
  10.000     84.3469      7.68  Q         .         .         .        V.
  10.083     84.3971      7.29  Q         .         .         .        V.
  10.167     84.4462      7.13  Q         .         .         .        V.
  10.250     84.4945      7.01  Q         .         .         .        V.
  10.333     84.5421      6.91  Q         .         .         .        V.
  10.417     84.5889      6.81  Q         .         .         .        V.
  10.500     84.6353      6.74  Q         .         .         .        V.
  10.583     84.6813      6.67  Q         .         .         .        V.
  10.667     84.7267      6.59  Q         .         .         .        V.
  10.750     84.7717      6.53  Q         .         .         .        V.
  10.833     84.8161      6.45  Q         .         .         .        V.
  10.917     84.8601      6.39  Q         .         .         .        V.
  11.000     84.9035      6.30  Q         .         .         .        V.
  11.083     84.9463      6.21  Q         .         .         .        V.
  11.167     84.9885      6.13  Q         .         .         .        V.
  11.250     85.0299      6.02  Q         .         .         .        V.
  11.333     85.0707      5.93  Q         .         .         .        V.
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```
   11.417     85.1109      5.83  Q         .         .         .        V.
   11.500     85.1504      5.73  Q         .         .         .        V.
   11.583     85.1892      5.63  Q         .         .         .        V.
   11.667     85.2272      5.52  Q         .         .         .        V.
   11.750     85.2645      5.41  Q         .         .         .        V.
   11.833     85.3010      5.30  Q         .         .         .        V.
   11.917     85.3367      5.19  Q         .         .         .        V.
   12.000     85.3709      4.95  Q         .         .         .        V.
   12.083     85.4018      4.50  Q         .         .         .        V.
   12.167     85.4285      3.87  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      200.0     400.0     600.0     800.0
 ----------------------------------------------------------------------------
   12.250     85.4498      3.10  Q         .         .         .        V.
   12.333     85.4646      2.15  Q         .         .         .        V.
   12.417     85.4706      0.87  Q         .         .         .        V.
   12.500     85.4716      0.15  Q         .         .         .        V.
   12.583     85.4723      0.09  Q         .         .         .        V.
   12.667     85.4727      0.06  Q         .         .         .        V.
   12.750     85.4729      0.03  Q         .         .         .        V.
   12.833     85.4730      0.02  Q         .         .         .         V
   12.917     85.4730      0.00  Q         .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
               0%                             775.0
              10%                             215.0
              20%                              85.0
              30%                              60.0
              40%                              45.0
              50%                              35.0
              60%                              30.0
              70%                              25.0
              80%                              15.0
              90%                              15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 10 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                            *
* 9369 - 1/17/17 - JO                                                       *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 09:17 01/17/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   29227.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   14259.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1478.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3881.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.464 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.51 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9891


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.958



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 2.015               945.769
        2                 7.502              2575.395
        3                16.876              4399.666
        4                30.805              6537.602
        5                41.889              5202.379
        6                49.415              3532.752
        7                54.792              2523.725
        8                58.725              1845.581
        9                62.224              1642.708
       10                65.149              1372.467
       11                67.766              1228.707
       12                70.065              1078.935
       13                72.219              1010.701
       14                74.021               846.150
       15                75.666               772.082
       16                77.196               718.096
       17                78.594               655.874
       18                79.870               598.855
       19                81.082               569.094
       20                82.218               533.335
       21                83.197               459.371
       22                84.129               437.316
       23                84.936               378.919
       24                85.733               374.020
       25                86.470               345.842
       26                87.174               330.576
       27                87.874               328.589
       28                88.521               303.626
       29                89.151               295.866
       30                89.781               295.254
       31                90.364               273.711
       32                90.921               261.361
```

```
     33            91.478          261.461
     34            92.019          254.313
     35            92.492          221.849
     36            92.955          217.459
     37            93.419          217.459
     38            93.879          216.134
     39            94.265          181.216
     40            94.621          166.921
     41            94.977          166.925
     42            95.332          166.821
     43            95.688          167.025
     44            96.025          158.141
     45            96.290          124.451
     46            96.548          121.186
     47            96.807          121.390
     48            97.065          121.186
     49            97.324          121.390
     50            97.582          121.286
     51            97.840          121.082
     52            98.026           87.188
     53            98.097           33.489
     54            98.168           33.281
     55            98.238           33.077
     56            98.309           33.081
     57            98.379           33.077
     58            98.450           33.077
     59            98.521           33.285
     60            98.591           32.873
     61            98.662           33.281
     62            98.732           32.876
     63            98.803           33.281
     64            98.873           33.081
     65            98.944           33.077
     66            99.014           33.077
     67            99.085           33.077
     68            99.155           33.077
     69            99.226           33.077
     70            99.296           33.077
     71            99.366           33.077
     72            99.437           33.077
     73            99.507           33.077
     74            99.578           33.077
     75            99.648           33.077
     76            99.719           33.077
     77            99.789           33.077
     78            99.860           33.077
     79            99.930           33.077
     80           100.000           32.726


****************************************************************************
        UNIT             UNIT          UNIT             EFFECTIVE
       PERIOD          RAINFALL      SOIL-LOSS          RAINFALL
      (NUMBER)         (INCHES)       (INCHES)          (INCHES)
----------------------------------------------------------------------------
           1            0.0075        0.0067             0.0007
           2            0.0090        0.0081             0.0009
           3            0.0090        0.0081             0.0009
           4            0.0090        0.0081             0.0009
           5            0.0090        0.0081             0.0009
           6            0.0105        0.0094             0.0010
           7            0.0105        0.0094             0.0010
           8            0.0105        0.0094             0.0010
           9            0.0105        0.0094             0.0010
          10            0.0105        0.0094             0.0010
          11            0.0105        0.0094             0.0010
          12            0.0119        0.0108             0.0012
          13            0.0119        0.0108             0.0012
          14            0.0119        0.0108             0.0012
          15            0.0119        0.0108             0.0012
          16            0.0119        0.0108             0.0012
          17            0.0119        0.0108             0.0012
          18            0.0119        0.0108             0.0012
          19            0.0119        0.0108             0.0012
          20            0.0119        0.0108             0.0012
          21            0.0119        0.0108             0.0012
          22            0.0119        0.0108             0.0012
          23            0.0119        0.0108             0.0012
          24            0.0134        0.0121             0.0013
          25            0.0119        0.0108             0.0012
          26            0.0134        0.0121             0.0013
          27            0.0134        0.0121             0.0013
          28            0.0134        0.0121             0.0013
          29            0.0134        0.0121             0.0013
          30            0.0134        0.0121             0.0013
          31            0.0134        0.0121             0.0013
          32            0.0134        0.0121             0.0013
          33            0.0149        0.0134             0.0015
          34            0.0149        0.0134             0.0015
          35            0.0149        0.0134             0.0015
          36            0.0149        0.0134             0.0015
          37            0.0149        0.0134             0.0015
          38            0.0164        0.0148             0.0016
          39            0.0164        0.0148             0.0016
          40            0.0164        0.0148             0.0016
          41            0.0179        0.0161             0.0018
          42            0.0194        0.0175             0.0019
          43            0.0209        0.0188             0.0021
```

```
          44             0.0209           0.0188              0.0021
          45             0.0224           0.0196              0.0028
          46             0.0224           0.0196              0.0028
          47             0.0239           0.0196              0.0043
          48             0.0239           0.0196              0.0043
          49             0.0254           0.0196              0.0058
          50             0.0269           0.0196              0.0072
          51             0.0284           0.0196              0.0087
          52             0.0299           0.0196              0.0102
          53             0.0314           0.0196              0.0117
          54             0.0314           0.0196              0.0117
          55             0.0329           0.0196              0.0132
          56             0.0344           0.0196              0.0147
          57             0.0358           0.0196              0.0162
          58             0.0358           0.0196              0.0162
          59             0.0373           0.0196              0.0177
          60             0.0388           0.0196              0.0192
          61             0.0463           0.0196              0.0267
          62             0.0538           0.0196              0.0341
          63             0.0582           0.0196              0.0386
          64             0.0627           0.0196              0.0431
          65             0.0702           0.0196              0.0506
          66             0.0836           0.0196              0.0640
          67             0.0284           0.0196              0.0087
          68             0.0134           0.0121              0.0013
          69             0.0090           0.0081              0.0009
          70             0.0075           0.0067              0.0007
          71             0.0045           0.0040              0.0004
          72             0.0030           0.0027              0.0003

         TOTAL STORM RAINFALL(INCHES) =  1.49
         TOTAL SOIL-LOSS(INCHES) =  1.00
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.49

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     323.4124
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     159.5338
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      350.0     700.0    1050.0    1400.0
----------------------------------------------------------------------------
   0.083      0.0049      0.71  Q         .         .         .         .
   0.167      0.0239      2.77  Q         .         .         .         .
   0.250      0.0683      6.44  Q         .         .         .         .
   0.333      0.1508     11.98  Q         .         .         .         .
   0.417      0.2668     16.84  Q         .         .         .         .
   0.500      0.4073     20.40  Q         .         .         .         .
   0.583      0.5670     23.19  Q         .         .         .         .
   0.667      0.7434     25.61  Q         .         .         .         .
   0.750      0.9368     28.09  Q         .         .         .         .
   0.833      1.1443     30.13  Q         .         .         .         .
   0.917      1.3632     31.78  Q         .         .         .         .
   1.000      1.5925     33.29  Q         .         .         .         .
   1.083      1.8326     34.87  Q         .         .         .         .
   1.167      2.0843     36.55  VQ        .         .         .         .
   1.250      2.3491     38.44  VQ        .         .         .         .
   1.333      2.6249     40.05  VQ        .         .         .         .
   1.417      2.9095     41.33  VQ        .         .         .         .
   1.500      3.2016     42.41  VQ        .         .         .         .
   1.583      3.5000     43.32  VQ        .         .         .         .
   1.667      3.8042     44.17  VQ        .         .         .         .
   1.750      4.1134     44.90  .Q        .         .         .         .
   1.833      4.4273     45.58  .Q        .         .         .         .
   1.917      4.7453     46.18  .Q        .         .         .         .
   2.000      5.0683     46.89  .Q        .         .         .         .
   2.083      5.3965     47.65  .Q        .         .         .         .
   2.167      5.7308     48.55  .Q        .         .         .         .
   2.250      6.0733     49.72  .Q        .         .         .         .
   2.333      6.4218     50.61  .Q        .         .         .         .
   2.417      6.7782     51.75  .Q        .         .         .         .
   2.500      7.1417     52.78  .Q        .         .         .         .
   2.583      7.5107     53.58  .Q        .         .         .         .
   2.667      7.8845     54.28  .Q        .         .         .         .
   2.750      8.2633     55.00  .QV       .         .         .         .
   2.833      8.6486     55.94  .QV       .         .         .         .
   2.917      9.0417     57.08  .QV       .         .         .         .
   3.000      9.4448     58.52  .QV       .         .         .         .
   3.083      9.8560     59.72  .QV       .         .         .         .
   3.167     10.2748     60.81  .QV       .         .         .         .
   3.250     10.7014     61.94  .QV       .         .         .         .
   3.333     11.1367     63.21  .QV       .         .         .         .
   3.417     11.5837     64.90  .QV       .         .         .         .
   3.500     12.0432     66.72  .Q V      .         .         .         .
   3.583     12.5178     68.92  .Q V      .         .         .         .
   3.667     13.0120     71.76  . QV      .         .         .         .
   3.750     13.5319     75.49  . QV      .         .         .         .
   3.833     14.0837     80.12  . QV      .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      350.0     700.0    1050.0    1400.0
```

```
---------------------------------------------------------------------------
   3.917     14.6812     86.75  . QV      .         .         .         .
   4.000     15.3473     96.72  . QV      .         .         .         .
   4.083     16.1022    109.61  .  QV     .         .         .         .
   4.167     16.9851    128.20  .  QV     .         .         .         .
   4.250     18.0220    150.56  .   Q     .         .         .         .
   4.333     19.2589    179.60  .   VQ    .         .         .         .
   4.417     20.7372    214.64  .    VQ   .         .         .         .
   4.500     22.4746    252.27  .    V Q  .         .         .         .
   4.583     24.4772    290.78  .     V Q .         .         .         .
   4.667     26.7413    328.75  .     V  Q.         .         .         .
   4.750     29.2597    365.68  .      V  Q         .         .         .
   4.833     32.0479    404.85  .       V .Q        .         .         .
   4.917     35.1178    445.74  .       V . Q       .         .         .
   5.000     38.4697    486.71  .        V.  Q      .         .         .
   5.083     42.1369    532.48  .         V    Q    .         .         .
   5.167     46.2488    597.05  .         .V     Q  .         .         .
   5.250     50.9939    688.98  .         . V      Q.         .         .
   5.333     56.6064    814.94  .         .   V     .  Q      .         .
   5.417     63.2439    963.76  .         .    V    .      Q  .         .
   5.500     71.0174   1128.72  .         .      V  .         . Q       .
   5.583     79.6821   1258.11  .         .        V.         .    Q    .
   5.667     88.6572   1303.18  .         .         . V       .      Q  .
   5.750     97.1529   1233.58  .         .         .   V     .    Q    .
   5.833    103.9623    988.73  .         .         .     V Q .         .
   5.917    109.2136    762.48  .         .         .Q     V  .         .
   6.000    113.4329    612.64  .         .      Q  .       V .         .
   6.083    116.9806    515.13  .         .   Q     .        V.         .
   6.167    120.1053    453.70  .         . Q       .         V         .
   6.250    122.8649    400.70  .         .Q        .         V         .
   6.333    125.3379    359.08  .         Q         .         .V        .
   6.417    127.5663    323.56  .        Q.         .         .V        .
   6.500    129.5941    294.45  .       Q .         .         . V       .
   6.583    131.4291    266.43  .      Q  .         .         . V       .
   6.667    133.1210    245.66  .      Q  .         .         .  V      .
   6.750    134.6889    227.66  .     Q   .         .         .  V      .
   6.833    136.1415    210.92  .     Q   .         .         .   V     .
   6.917    137.4902    195.84  .    Q    .         .         .   V     .
   7.000    138.7486    182.72  .    Q    .         .         .   V     .
   7.083    139.9189    169.93  .   Q     .         .         .    V    .
   7.167    141.0036    157.49  .   Q     .         .         .    V    .
   7.250    142.0245    148.24  .   Q     .         .         .    V    .
   7.333    142.9851    139.48  .  Q      .         .         .    V    .
   7.417    143.9037    133.39  .  Q      .         .         .     V   .
   7.500    144.7795    127.16  .  Q      .         .         .     V   .
   7.583    145.6188    121.86  .  Q      .         .         .     V   .
   7.667    146.4252    117.09  .  Q      .         .         .     V   .
   7.750    147.1952    111.81  .  Q      .         .         .     V   .
   7.833    147.9352    107.44  .  Q      .         .         .      V  .
   7.917    148.6447    103.03  . Q       .         .         .      V  .
   8.000    149.3192     97.93  . Q       .         .         .      V  .

---------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      350.0     700.0    1050.0    1400.0
---------------------------------------------------------------------------
   8.083    149.9633     93.52  . Q       .         .         .      V  .
   8.167    150.5804     89.60  . Q       .         .         .      V  .
   8.250    151.1657     84.99  . Q       .         .         .      V  .
   8.333    151.7155     79.83  . Q       .         .         .       V .
   8.417    152.2390     76.01  . Q       .         .         .       V .
   8.500    152.7369     72.30  . Q       .         .         .       V .
   8.583    153.2060     68.11  .Q        .         .         .       V .
   8.667    153.6411     63.18  .Q        .         .         .       V .
   8.750    154.0516     59.60  .Q        .         .         .       V .
   8.833    154.4422     56.72  .Q        .         .         .       V .
   8.917    154.8115     53.61  .Q        .         .         .       V .
   9.000    155.1570     50.17  .Q        .         .         .       V .
   9.083    155.4756     46.26  .Q        .         .         .       V .
   9.167    155.7671     42.33  .Q        .         .         .        V.
   9.250    156.0437     40.16  .Q        .         .         .        V.
   9.333    156.3060     38.09  .Q        .         .         .        V.
   9.417    156.5497     35.39  .Q        .         .         .        V.
   9.500    156.7711     32.15  Q         .         .         .        V.
   9.583    156.9676     28.52  Q         .         .         .        V.
   9.667    157.1357     24.40  Q         .         .         .        V.
   9.750    157.2696     19.45  Q         .         .         .        V.
   9.833    157.3774     15.64  Q         .         .         .        V.
   9.917    157.4810     15.05  Q         .         .         .        V.
  10.000    157.5835     14.88  Q         .         .         .        V.
  10.083    157.6851     14.75  Q         .         .         .        V.
  10.167    157.7858     14.63  Q         .         .         .        V.
  10.250    157.8859     14.53  Q         .         .         .        V.
  10.333    157.9854     14.44  Q         .         .         .        V.
  10.417    158.0841     14.34  Q         .         .         .        V.
  10.500    158.1823     14.26  Q         .         .         .        V.
  10.583    158.2794     14.11  Q         .         .         .        V.
  10.667    158.3757     13.98  Q         .         .         .        V.
  10.750    158.4706     13.78  Q         .         .         .        V.
  10.833    158.5638     13.53  Q         .         .         .        V.
  10.917    158.6550     13.24  Q         .         .         .        V.
  11.000    158.7439     12.91  Q         .         .         .        V.
  11.083    158.8301     12.52  Q         .         .         .        V.
  11.167    158.9136     12.13  Q         .         .         .        V.
  11.250    158.9942     11.69  Q         .         .         .        V.
  11.333    159.0713     11.20  Q         .         .         .        V.
  11.417    159.1448     10.67  Q         .         .         .        V.
  11.500    159.2146     10.13  Q         .         .         .        V.
  11.583    159.2803      9.54  Q         .         .         .        V.
  11.667    159.3416      8.91  Q         .         .         .        V.
```

```
  11.750    159.3969      8.02  Q         .         .         .        V.
  11.833    159.4443      6.89  Q         .         .         .        V.
  11.917    159.4830      5.61  Q         .         .         .        V.
  12.000    159.5118      4.18  Q         .         .         .        V.
  12.083    159.5291      2.51  Q         .         .         .        V.
  12.167    159.5319      0.41  Q         .         .         .        V.

 ----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      350.0     700.0    1050.0    1400.0
 ----------------------------------------------------------------------------
  12.250    159.5328      0.12  Q         .         .         .        V.
  12.333    159.5333      0.08  Q         .         .         .        V.
  12.417    159.5336      0.05  Q         .         .         .        V.
  12.500    159.5338      0.02  Q         .         .         .        V.
  12.583    159.5339      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
              0%                              755.0
             10%                              195.0
             20%                              125.0
             30%                               90.0
             40%                               60.0
             50%                               45.0
             60%                               35.0
             70%                               30.0
             80%                               20.0
             90%                               15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

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              F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 5 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                           *
* 9369 - 1/17/17 - JO                                                      *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 09:11 01/17/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   29227.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   14259.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1478.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3881.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.464 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.20 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9891


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.958



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                2.015               945.769
        2                7.502              2575.395
        3               16.876              4399.666
        4               30.805              6537.602
        5               41.889              5202.379
        6               49.415              3532.752
        7               54.792              2523.725
        8               58.725              1845.581
        9               62.224              1642.708
       10               65.149              1372.467
       11               67.766              1228.707
       12               70.065              1078.935
       13               72.219              1010.701
       14               74.021               846.150
       15               75.666               772.082
       16               77.196               718.096
       17               78.594               655.874
       18               79.870               598.855
       19               81.082               569.094
       20               82.218               533.335
       21               83.197               459.371
       22               84.129               437.316
       23               84.936               378.919
       24               85.733               374.020
       25               86.470               345.842
       26               87.174               330.576
       27               87.874               328.589
       28               88.521               303.626
       29               89.151               295.866
       30               89.781               295.254
       31               90.364               273.711
       32               90.921               261.361
```

```
       33              91.478              261.461
       34              92.019              254.313
       35              92.492              221.849
       36              92.955              217.459
       37              93.419              217.459
       38              93.879              216.134
       39              94.265              181.216
       40              94.621              166.921
       41              94.977              166.925
       42              95.332              166.821
       43              95.688              167.025
       44              96.025              158.141
       45              96.290              124.451
       46              96.548              121.186
       47              96.807              121.390
       48              97.065              121.186
       49              97.324              121.390
       50              97.582              121.286
       51              97.840              121.082
       52              98.026               87.188
       53              98.097               33.489
       54              98.168               33.281
       55              98.238               33.077
       56              98.309               33.081
       57              98.379               33.077
       58              98.450               33.077
       59              98.521               33.285
       60              98.591               32.873
       61              98.662               33.281
       62              98.732               32.876
       63              98.803               33.281
       64              98.873               33.081
       65              98.944               33.077
       66              99.014               33.077
       67              99.085               33.077
       68              99.155               33.077
       69              99.226               33.077
       70              99.296               33.077
       71              99.366               33.077
       72              99.437               33.077
       73              99.507               33.077
       74              99.578               33.077
       75              99.648               33.077
       76              99.719               33.077
       77              99.789               33.077
       78              99.860               33.077
       79              99.930               33.077
       80             100.000               32.726


****************************************************************************
         UNIT             UNIT            UNIT              EFFECTIVE
        PERIOD          RAINFALL        SOIL-LOSS           RAINFALL
       (NUMBER)         (INCHES)         (INCHES)           (INCHES)
----------------------------------------------------------------------------
           1             0.0059           0.0053             0.0006
           2             0.0071           0.0064             0.0007
           3             0.0071           0.0064             0.0007
           4             0.0071           0.0064             0.0007
           5             0.0071           0.0064             0.0007
           6             0.0083           0.0075             0.0008
           7             0.0083           0.0075             0.0008
           8             0.0083           0.0075             0.0008
           9             0.0083           0.0075             0.0008
          10             0.0083           0.0075             0.0008
          11             0.0083           0.0075             0.0008
          12             0.0095           0.0085             0.0009
          13             0.0095           0.0085             0.0009
          14             0.0095           0.0085             0.0009
          15             0.0095           0.0085             0.0009
          16             0.0095           0.0085             0.0009
          17             0.0095           0.0085             0.0009
          18             0.0095           0.0085             0.0009
          19             0.0095           0.0085             0.0009
          20             0.0095           0.0085             0.0009
          21             0.0095           0.0085             0.0009
          22             0.0095           0.0085             0.0009
          23             0.0095           0.0085             0.0009
          24             0.0107           0.0096             0.0011
          25             0.0095           0.0085             0.0009
          26             0.0107           0.0096             0.0011
          27             0.0107           0.0096             0.0011
          28             0.0107           0.0096             0.0011
          29             0.0107           0.0096             0.0011
          30             0.0107           0.0096             0.0011
          31             0.0107           0.0096             0.0011
          32             0.0107           0.0096             0.0011
          33             0.0119           0.0107             0.0012
          34             0.0119           0.0107             0.0012
          35             0.0119           0.0107             0.0012
          36             0.0119           0.0107             0.0012
          37             0.0119           0.0107             0.0012
          38             0.0131           0.0118             0.0013
          39             0.0131           0.0118             0.0013
          40             0.0131           0.0118             0.0013
          41             0.0142           0.0128             0.0014
          42             0.0154           0.0139             0.0015
          43             0.0166           0.0150             0.0017
```

```
          44            0.0166           0.0150              0.0017
          45            0.0178           0.0160              0.0018
          46            0.0178           0.0160              0.0018
          47            0.0190           0.0171              0.0019
          48            0.0190           0.0171              0.0019
          49            0.0202           0.0182              0.0020
          50            0.0214           0.0192              0.0021
          51            0.0226           0.0196              0.0029
          52            0.0237           0.0196              0.0041
          53            0.0249           0.0196              0.0053
          54            0.0249           0.0196              0.0053
          55            0.0261           0.0196              0.0065
          56            0.0273           0.0196              0.0077
          57            0.0285           0.0196              0.0089
          58            0.0285           0.0196              0.0089
          59            0.0297           0.0196              0.0100
          60            0.0309           0.0196              0.0112
          61            0.0368           0.0196              0.0172
          62            0.0427           0.0196              0.0231
          63            0.0463           0.0196              0.0267
          64            0.0498           0.0196              0.0302
          65            0.0558           0.0196              0.0362
          66            0.0665           0.0196              0.0468
          67            0.0226           0.0196              0.0029
          68            0.0107           0.0096              0.0011
          69            0.0071           0.0064              0.0007
          70            0.0059           0.0053              0.0006
          71            0.0036           0.0032              0.0004
          72            0.0024           0.0021              0.0002

         TOTAL STORM RAINFALL(INCHES) =  1.19
         TOTAL SOIL-LOSS(INCHES) =  0.87
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.31

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     282.4119
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     101.3996
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
----------------------------------------------------------------------------
   0.083      0.0039      0.56  Q         .         .         .         .
   0.167      0.0190      2.20  Q         .         .         .         .
   0.250      0.0543      5.12  Q         .         .         .         .
   0.333      0.1198      9.52  Q         .         .         .         .
   0.417      0.2120     13.38  Q         .         .         .         .
   0.500      0.3237     16.21  Q         .         .         .         .
   0.583      0.4506     18.43  Q         .         .         .         .
   0.667      0.5908     20.35  Q         .         .         .         .
   0.750      0.7445     22.32  Q         .         .         .         .
   0.833      0.9094     23.95  VQ        .         .         .         .
   0.917      1.0834     25.26  VQ        .         .         .         .
   1.000      1.2656     26.46  VQ        .         .         .         .
   1.083      1.4564     27.71  VQ        .         .         .         .
   1.167      1.6564     29.05  VQ        .         .         .         .
   1.250      1.8668     30.55  VQ        .         .         .         .
   1.333      2.0860     31.83  VQ        .         .         .         .
   1.417      2.3122     32.85  VQ        .         .         .         .
   1.500      2.5443     33.70  .Q        .         .         .         .
   1.583      2.7814     34.43  .Q        .         .         .         .
   1.667      3.0232     35.10  .Q        .         .         .         .
   1.750      3.2689     35.68  .Q        .         .         .         .
   1.833      3.5184     36.22  .Q        .         .         .         .
   1.917      3.7711     36.70  .Q        .         .         .         .
   2.000      4.0278     37.26  .Q        .         .         .         .
   2.083      4.2886     37.87  .Q        .         .         .         .
   2.167      4.5543     38.58  .Q        .         .         .         .
   2.250      4.8264     39.51  .Q        .         .         .         .
   2.333      5.1034     40.22  .QV       .         .         .         .
   2.417      5.3867     41.12  .QV       .         .         .         .
   2.500      5.6755     41.94  .QV       .         .         .         .
   2.583      5.9688     42.58  .QV       .         .         .         .
   2.667      6.2658     43.14  .QV       .         .         .         .
   2.750      6.5669     43.71  .QV       .         .         .         .
   2.833      6.8730     44.46  .QV       .         .         .         .
   2.917      7.1855     45.36  . Q       .         .         .         .
   3.000      7.5058     46.51  . Q       .         .         .         .
   3.083      7.8326     47.46  . QV      .         .         .         .
   3.167      8.1654     48.32  . QV      .         .         .         .
   3.250      8.5044     49.22  . QV      .         .         .         .
   3.333      8.8504     50.23  . QV      .         .         .         .
   3.417      9.2056     51.57  . QV      .         .         .         .
   3.500      9.5707     53.02  . QV      .         .         .         .
   3.583      9.9479     54.77  . QV      .         .         .         .
   3.667     10.3407     57.03  . Q V     .         .         .         .
   3.750     10.7511     59.60  . Q V     .         .         .         .
   3.833     11.1794     62.19  . Q V     .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
```

```
----------------------------------------------------------------------------
   3.917     11.6243     64.60  . Q V     .         .         .         .
   4.000     12.0859     67.02  . Q V     .         .         .         .
   4.083     12.5636     69.37  .  QV     .         .         .         .
   4.167     13.0589     71.91  .  Q V    .         .         .         .
   4.250     13.5770     75.23  .  Q V    .         .         .         .
   4.333     14.1350     81.03  .  Q V    .         .         .         .
   4.417     14.7629     91.17  .   QV    .         .         .         .
   4.500     15.4966    106.54  .   Q V   .         .         .         .
   4.583     16.3664    126.29  .    QV   .         .         .         .
   4.667     17.3887    148.44  .     Q   .         .         .         .
   4.750     18.5685    171.30  .      Q  .         .         .         .
   4.833     19.9249    196.96  .      VQ .         .         .         .
   4.917     21.4718    224.60  .       VQ.         .         .         .
   5.000     23.2138    252.93  .        V.Q       .         .         .
   5.083     25.1798    285.48  .        V. Q      .         .         .
   5.167     27.4756    333.35  .         V   Q     .         .         .
   5.250     30.2534    403.33  .         .V     Q  .         .         .
   5.333     33.7013    500.63  .         .  V      . Q       .         .
   5.417     37.9459    616.32  .         .   V     .      Q  .         .
   5.500     43.0769    745.03  .         .     V   .         .  Q      .
   5.583     48.9012    845.69  .         .        V.         .      Q  .
   5.667     54.9844    883.28  .         .         .V        .        Q.
   5.750     60.7454    836.50  .         .         .  V      .      Q  .
   5.833     65.2766    657.94  .         .         .    V   Q.         .
   5.917     68.7403    502.93  .         .         . Q    V  .         .
   6.000     71.5182    403.35  .         .      Q  .       V .         .
   6.083     73.8509    338.70  .         .    Q    .        V.         .
   6.167     75.9083    298.74  .         .  Q      .        V.         .
   6.250     77.7180    262.78  .         .Q        .         V         .
   6.333     79.3371    235.09  .         Q         .         .V        .
   6.417     80.7918    211.22  .        Q.         .         .V        .
   6.500     82.1133    191.89  .       Q .         .         . V       .
   6.583     83.3040    172.88  .      Q  .         .         . V       .
   6.667     84.4017    159.39  .      Q  .         .         .  V      .
   6.750     85.4175    147.50  .     Q   .         .         .  V      .
   6.833     86.3564    136.32  .     Q   .         .         .   V     .
   6.917     87.2263    126.31  .    Q    .         .         .   V     .
   7.000     88.0366    117.66  .    Q    .         .         .   V     .
   7.083     88.7879    109.09  .   Q     .         .         .    V    .
   7.167     89.4814    100.69  .   Q     .         .         .    V    .
   7.250     90.1338     94.73  .   Q     .         .         .    V    .
   7.333     90.7462     88.92  .  Q      .         .         .    V    .
   7.417     91.3328     85.18  .  Q      .         .         .     V   .
   7.500     91.8915     81.11  .  Q      .         .         .     V   .
   7.583     92.4273     77.80  .  Q      .         .         .     V   .
   7.667     92.9425     74.81  .  Q      .         .         .     V   .
   7.750     93.4342     71.40  .  Q      .         .         .     V   .
   7.833     93.9076     68.74  .  Q      .         .         .      V  .
   7.917     94.3619     65.97  . Q       .         .         .      V  .
   8.000     94.7933     62.63  . Q       .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
----------------------------------------------------------------------------
   8.083     95.2056     59.87  . Q       .         .         .      V  .
   8.167     95.6012     57.44  . Q       .         .         .      V  .
   8.250     95.9763     54.47  . Q       .         .         .      V  .
   8.333     96.3283     51.10  . Q       .         .         .      V  .
   8.417     96.6648     48.86  . Q       .         .         .       V .
   8.500     96.9861     46.66  . Q       .         .         .       V .
   8.583     97.2897     44.07  .Q        .         .         .       V .
   8.667     97.5713     40.89  .Q        .         .         .       V .
   8.750     97.8384     38.79  .Q        .         .         .       V .
   8.833     98.0939     37.09  .Q        .         .         .       V .
   8.917     98.3361     35.17  .Q        .         .         .       V .
   9.000     98.5631     32.97  .Q        .         .         .       V .
   9.083     98.7725     30.40  .Q        .         .         .       V .
   9.167     98.9641     27.81  .Q        .         .         .        V.
   9.250     99.1472     26.59  .Q        .         .         .        V.
   9.333     99.3216     25.32  .Q        .         .         .        V.
   9.417     99.4836     23.53  .Q        .         .         .        V.
   9.500     99.6304     21.31  Q         .         .         .        V.
   9.583     99.7598     18.78  Q         .         .         .        V.
   9.667     99.8690     15.87  Q         .         .         .        V.
   9.750     99.9536     12.29  Q         .         .         .        V.
   9.833    100.0198      9.61  Q         .         .         .        V.
   9.917    100.0843      9.36  Q         .         .         .        V.
  10.000    100.1479      9.23  Q         .         .         .        V.
  10.083    100.2107      9.12  Q         .         .         .        V.
  10.167    100.2729      9.03  Q         .         .         .        V.
  10.250    100.3345      8.95  Q         .         .         .        V.
  10.333    100.3956      8.88  Q         .         .         .        V.
  10.417    100.4563      8.81  Q         .         .         .        V.
  10.500    100.5166      8.76  Q         .         .         .        V.
  10.583    100.5765      8.69  Q         .         .         .        V.
  10.667    100.6360      8.64  Q         .         .         .        V.
  10.750    100.6949      8.56  Q         .         .         .        V.
  10.833    100.7534      8.49  Q         .         .         .        V.
  10.917    100.8112      8.39  Q         .         .         .        V.
  11.000    100.8681      8.26  Q         .         .         .        V.
  11.083    100.9238      8.08  Q         .         .         .        V.
  11.167    100.9782      7.91  Q         .         .         .        V.
  11.250    101.0312      7.69  Q         .         .         .        V.
  11.333    101.0824      7.44  Q         .         .         .        V.
  11.417    101.1316      7.15  Q         .         .         .        V.
  11.500    101.1788      6.85  Q         .         .         .        V.
  11.583    101.2237      6.52  Q         .         .         .        V.
  11.667    101.2660      6.15  Q         .         .         .        V.
```

```
  11.750    101.3044      5.58  Q         .         .         .        V.
  11.833    101.3376      4.81  Q         .         .         .        V.
  11.917    101.3646      3.93  Q         .         .         .        V.
  12.000    101.3848      2.93  Q         .         .         .        V.
  12.083    101.3967      1.73  Q         .         .         .        V.
  12.167    101.3980      0.19  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      225.0     450.0     675.0     900.0
 ----------------------------------------------------------------------------
  12.250    101.3987      0.10  Q         .         .         .        V.
  12.333    101.3991      0.06  Q         .         .         .        V.
  12.417    101.3994      0.04  Q         .         .         .        V.
  12.500    101.3995      0.02  Q         .         .         .        V.
  12.583    101.3996      0.01  Q         .         .         .        V.
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                Duration
        Peak Flow Rate                     (minutes)
    =======================                =========
              0%                             755.0
             10%                             180.0
             20%                             105.0
             30%                              70.0
             40%                              50.0
             50%                              40.0
             60%                              30.0
             70%                              25.0
             80%                              20.0
             90%                              15.0
 ============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2014 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.0)
                 Release Date: 06/01/2014  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 2 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                           *
* 9369 - 1/17/17 - JO                                                      *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 09:04 01/17/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   29227.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   14259.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1478.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3881.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.464 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  0.85 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9891


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.958



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                2.015               945.769
        2                7.502              2575.395
        3               16.876              4399.666
        4               30.805              6537.602
        5               41.889              5202.379
        6               49.415              3532.752
        7               54.792              2523.725
        8               58.725              1845.581
        9               62.224              1642.708
       10               65.149              1372.467
       11               67.766              1228.707
       12               70.065              1078.935
       13               72.219              1010.701
       14               74.021               846.150
       15               75.666               772.082
       16               77.196               718.096
       17               78.594               655.874
       18               79.870               598.855
       19               81.082               569.094
       20               82.218               533.335
       21               83.197               459.371
       22               84.129               437.316
       23               84.936               378.919
       24               85.733               374.020
       25               86.470               345.842
       26               87.174               330.576
       27               87.874               328.589
       28               88.521               303.626
       29               89.151               295.866
       30               89.781               295.254
       31               90.364               273.711
       32               90.921               261.361
```

```
       33                91.478                261.461
       34                92.019                254.313
       35                92.492                221.849
       36                92.955                217.459
       37                93.419                217.459
       38                93.879                216.134
       39                94.265                181.216
       40                94.621                166.921
       41                94.977                166.925
       42                95.332                166.821
       43                95.688                167.025
       44                96.025                158.141
       45                96.290                124.451
       46                96.548                121.186
       47                96.807                121.390
       48                97.065                121.186
       49                97.324                121.390
       50                97.582                121.286
       51                97.840                121.082
       52                98.026                 87.188
       53                98.097                 33.489
       54                98.168                 33.281
       55                98.238                 33.077
       56                98.309                 33.081
       57                98.379                 33.077
       58                98.450                 33.077
       59                98.521                 33.285
       60                98.591                 32.873
       61                98.662                 33.281
       62                98.732                 32.876
       63                98.803                 33.281
       64                98.873                 33.081
       65                98.944                 33.077
       66                99.014                 33.077
       67                99.085                 33.077
       68                99.155                 33.077
       69                99.226                 33.077
       70                99.296                 33.077
       71                99.366                 33.077
       72                99.437                 33.077
       73                99.507                 33.077
       74                99.578                 33.077
       75                99.648                 33.077
       76                99.719                 33.077
       77                99.789                 33.077
       78                99.860                 33.077
       79                99.930                 33.077
       80               100.000                 32.726


****************************************************************************
         UNIT              UNIT           UNIT               EFFECTIVE
        PERIOD           RAINFALL       SOIL-LOSS             RAINFALL
       (NUMBER)          (INCHES)        (INCHES)             (INCHES)
----------------------------------------------------------------------------
           1              0.0042          0.0038               0.0004
           2              0.0051          0.0046               0.0005
           3              0.0051          0.0046               0.0005
           4              0.0051          0.0046               0.0005
           5              0.0051          0.0046               0.0005
           6              0.0059          0.0053               0.0006
           7              0.0059          0.0053               0.0006
           8              0.0059          0.0053               0.0006
           9              0.0059          0.0053               0.0006
          10              0.0059          0.0053               0.0006
          11              0.0059          0.0053               0.0006
          12              0.0067          0.0061               0.0007
          13              0.0067          0.0061               0.0007
          14              0.0067          0.0061               0.0007
          15              0.0067          0.0061               0.0007
          16              0.0067          0.0061               0.0007
          17              0.0067          0.0061               0.0007
          18              0.0067          0.0061               0.0007
          19              0.0067          0.0061               0.0007
          20              0.0067          0.0061               0.0007
          21              0.0067          0.0061               0.0007
          22              0.0067          0.0061               0.0007
          23              0.0067          0.0061               0.0007
          24              0.0076          0.0068               0.0008
          25              0.0067          0.0061               0.0007
          26              0.0076          0.0068               0.0008
          27              0.0076          0.0068               0.0008
          28              0.0076          0.0068               0.0008
          29              0.0076          0.0068               0.0008
          30              0.0076          0.0068               0.0008
          31              0.0076          0.0068               0.0008
          32              0.0076          0.0068               0.0008
          33              0.0084          0.0076               0.0008
          34              0.0084          0.0076               0.0008
          35              0.0084          0.0076               0.0008
          36              0.0084          0.0076               0.0008
          37              0.0084          0.0076               0.0008
          38              0.0093          0.0084               0.0009
          39              0.0093          0.0084               0.0009
          40              0.0093          0.0084               0.0009
          41              0.0101          0.0091               0.0010
          42              0.0110          0.0099               0.0011
          43              0.0118          0.0106               0.0012
```

```
          44            0.0118           0.0106              0.0012
          45            0.0127           0.0114              0.0013
          46            0.0127           0.0114              0.0013
          47            0.0135           0.0121              0.0013
          48            0.0135           0.0121              0.0013
          49            0.0143           0.0129              0.0014
          50            0.0152           0.0137              0.0015
          51            0.0160           0.0144              0.0016
          52            0.0169           0.0152              0.0017
          53            0.0177           0.0159              0.0018
          54            0.0177           0.0159              0.0018
          55            0.0186           0.0167              0.0019
          56            0.0194           0.0175              0.0019
          57            0.0202           0.0182              0.0020
          58            0.0202           0.0182              0.0020
          59            0.0211           0.0190              0.0021
          60            0.0219           0.0196              0.0023
          61            0.0262           0.0196              0.0065
          62            0.0304           0.0196              0.0107
          63            0.0329           0.0196              0.0133
          64            0.0354           0.0196              0.0158
          65            0.0397           0.0196              0.0200
          66            0.0472           0.0196              0.0276
          67            0.0160           0.0144              0.0016
          68            0.0076           0.0068              0.0008
          69            0.0051           0.0046              0.0005
          70            0.0042           0.0038              0.0004
          71            0.0025           0.0023              0.0003
          72            0.0017           0.0015              0.0002

         TOTAL STORM RAINFALL(INCHES) =  0.84
         TOTAL SOIL-LOSS(INCHES) =  0.69
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.16

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     222.0003
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      50.8366
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      125.0     250.0     375.0     500.0
----------------------------------------------------------------------------
   0.083      0.0027      0.40  Q         .         .         .         .
   0.167      0.0135      1.57  Q         .         .         .         .
   0.250      0.0386      3.64  Q         .         .         .         .
   0.333      0.0852      6.77  Q         .         .         .         .
   0.417      0.1507      9.51  Q         .         .         .         .
   0.500      0.2301     11.52  Q         .         .         .         .
   0.583      0.3203     13.10  VQ        .         .         .         .
   0.667      0.4199     14.47  VQ        .         .         .         .
   0.750      0.5292     15.87  VQ        .         .         .         .
   0.833      0.6464     17.02  VQ        .         .         .         .
   0.917      0.7701     17.95  VQ        .         .         .         .
   1.000      0.8996     18.81  VQ        .         .         .         .
   1.083      1.0352     19.70  VQ        .         .         .         .
   1.167      1.1774     20.65  VQ        .         .         .         .
   1.250      1.3270     21.71  .Q        .         .         .         .
   1.333      1.4828     22.62  .Q        .         .         .         .
   1.417      1.6436     23.35  .Q        .         .         .         .
   1.500      1.8086     23.96  .Q        .         .         .         .
   1.583      1.9771     24.47  .Q        .         .         .         .
   1.667      2.1490     24.95  .Q        .         .         .         .
   1.750      2.3237     25.37  .VQ       .         .         .         .
   1.833      2.5010     25.75  .VQ       .         .         .         .
   1.917      2.6806     26.09  . Q       .         .         .         .
   2.000      2.8631     26.49  . Q       .         .         .         .
   2.083      3.0485     26.92  . Q       .         .         .         .
   2.167      3.2374     27.43  . Q       .         .         .         .
   2.250      3.4308     28.09  . Q       .         .         .         .
   2.333      3.6277     28.59  . Q       .         .         .         .
   2.417      3.8290     29.23  . QV      .         .         .         .
   2.500      4.0343     29.81  . QV      .         .         .         .
   2.583      4.2428     30.27  . QV      .         .         .         .
   2.667      4.4540     30.66  . QV      .         .         .         .
   2.750      4.6680     31.07  . QV      .         .         .         .
   2.833      4.8856     31.60  . QV      .         .         .         .
   2.917      5.1077     32.25  . Q V     .         .         .         .
   3.000      5.3353     33.06  . Q V     .         .         .         .
   3.083      5.5677     33.73  . Q V     .         .         .         .
   3.167      5.8043     34.35  . Q V     .         .         .         .
   3.250      6.0452     34.99  . Q V     .         .         .         .
   3.333      6.2911     35.71  . Q V     .         .         .         .
   3.417      6.5436     36.66  . Q  V    .         .         .         .
   3.500      6.8032     37.69  .  Q V    .         .         .         .
   3.583      7.0713     38.93  .  Q V    .         .         .         .
   3.667      7.3505     40.54  .  Q V    .         .         .         .
   3.750      7.6422     42.36  .  Q  V   .         .         .         .
   3.833      7.9467     44.21  .  Q  V   .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      125.0     250.0     375.0     500.0
```

```
----------------------------------------------------------------------------
   3.917      8.2629     45.92  .  Q  V   .         .         .         .
   4.000      8.5911     47.64  .  Q  V   .         .         .         .
   4.083      8.9307     49.31  .  Q   V  .         .         .         .
   4.167      9.2827     51.12  .   Q  V  .         .         .         .
   4.250      9.6479     53.03  .   Q  V  .         .         .         .
   4.333     10.0282     55.22  .   Q  V  .         .         .         .
   4.417     10.4255     57.68  .   Q   V .         .         .         .
   4.500     10.8403     60.23  .   Q   V .         .         .         .
   4.583     11.2728     62.80  .    Q  V .         .         .         .
   4.667     11.7225     65.29  .    Q   V.         .         .         .
   4.750     12.1888     67.71  .    Q   V.         .         .         .
   4.833     12.6723     70.21  .    Q   V.         .         .         .
   4.917     13.1737     72.80  .    Q    V         .         .         .
   5.000     13.6935     75.48  .     Q   V         .         .         .
   5.083     14.2595     82.18  .     Q   .V        .         .         .
   5.167     14.9475     99.90  .      Q  .V        .         .         .
   5.250     15.8748    134.65  .         Q V       .         .         .
   5.333     17.1976    192.07  .         .  V Q    .         .         .
   5.417     19.0233    265.09  .         .   V     .Q        .         .
   5.500     21.4281    349.18  .         .     V   .      Q  .         .
   5.583     24.3155    419.25  .         .        V.         .  Q      .
   5.667     27.4433    454.16  .         .         .V        .     Q   .
   5.750     30.4735    439.98  .         .         .  V      .    Q    .
   5.833     32.8470    344.63  .         .         .    V Q  .         .
   5.917     34.6408    260.46  .         .         Q      V  .         .
   6.000     36.0648    206.76  .         .     Q   .       V .         .
   6.083     37.2509    172.23  .         .  Q      .        V.         .
   6.167     38.2942    151.48  .         . Q       .         V         .
   6.250     39.2065    132.46  .         Q         .         V         .
   6.333     40.0193    118.02  .        Q.         .         .V        .
   6.417     40.7469    105.64  .       Q .         .         . V       .
   6.500     41.4065     95.78  .      Q  .         .         . V       .
   6.583     41.9980     85.89  .     Q   .         .         .  V      .
   6.667     42.5432     79.16  .     Q   .         .         .  V      .
   6.750     43.0474     73.21  .    Q    .         .         .  V      .
   6.833     43.5126     67.55  .    Q    .         .         .   V     .
   6.917     43.9427     62.45  .   Q     .         .         .   V     .
   7.000     44.3424     58.05  .   Q     .         .         .   V     .
   7.083     44.7115     53.58  .   Q     .         .         .    V    .
   7.167     45.0498     49.12  .  Q      .         .         .    V    .
   7.250     45.3671     46.07  .  Q      .         .         .    V    .
   7.333     45.6631     42.99  .  Q      .         .         .    V    .
   7.417     45.9464     41.13  .  Q      .         .         .     V   .
   7.500     46.2156     39.09  .  Q      .         .         .     V   .
   7.583     46.4739     37.50  .  Q      .         .         .     V   .
   7.667     46.7223     36.06  . Q       .         .         .     V   .
   7.750     46.9590     34.38  . Q       .         .         .     V   .
   7.833     47.1873     33.15  . Q       .         .         .      V  .
   7.917     47.4068     31.87  . Q       .         .         .      V  .
   8.000     47.6149     30.21  . Q       .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      125.0     250.0     375.0     500.0
----------------------------------------------------------------------------
   8.083     47.8140     28.91  . Q       .         .         .      V  .
   8.167     48.0056     27.82  . Q       .         .         .      V  .
   8.250     48.1872     26.37  . Q       .         .         .      V  .
   8.333     48.3569     24.64  .Q        .         .         .       V .
   8.417     48.5192     23.57  .Q        .         .         .       V .
   8.500     48.6742     22.51  .Q        .         .         .       V .
   8.583     48.8206     21.26  .Q        .         .         .       V .
   8.667     48.9560     19.67  .Q        .         .         .       V .
   8.750     49.0849     18.70  .Q        .         .         .       V .
   8.833     49.2086     17.96  .Q        .         .         .       V .
   8.917     49.3265     17.12  .Q        .         .         .       V .
   9.000     49.4378     16.15  .Q        .         .         .       V .
   9.083     49.5408     14.97  .Q        .         .         .       V .
   9.167     49.6355     13.74  .Q        .         .         .        V.
   9.250     49.7276     13.37  .Q        .         .         .        V.
   9.333     49.8169     12.97  .Q        .         .         .        V.
   9.417     49.9009     12.20  Q         .         .         .        V.
   9.500     49.9775     11.12  Q         .         .         .        V.
   9.583     50.0451      9.82  Q         .         .         .        V.
   9.667     50.1019      8.25  Q         .         .         .        V.
   9.750     50.1447      6.21  Q         .         .         .        V.
   9.833     50.1766      4.63  Q         .         .         .        V.
   9.917     50.2074      4.48  Q         .         .         .        V.
  10.000     50.2376      4.38  Q         .         .         .        V.
  10.083     50.2673      4.31  Q         .         .         .        V.
  10.167     50.2965      4.24  Q         .         .         .        V.
  10.250     50.3253      4.18  Q         .         .         .        V.
  10.333     50.3538      4.14  Q         .         .         .        V.
  10.417     50.3820      4.09  Q         .         .         .        V.
  10.500     50.4099      4.05  Q         .         .         .        V.
  10.583     50.4375      4.00  Q         .         .         .        V.
  10.667     50.4648      3.97  Q         .         .         .        V.
  10.750     50.4917      3.91  Q         .         .         .        V.
  10.833     50.5183      3.86  Q         .         .         .        V.
  10.917     50.5445      3.81  Q         .         .         .        V.
  11.000     50.5704      3.75  Q         .         .         .        V.
  11.083     50.5958      3.69  Q         .         .         .        V.
  11.167     50.6209      3.64  Q         .         .         .        V.
  11.250     50.6455      3.57  Q         .         .         .        V.
  11.333     50.6697      3.51  Q         .         .         .        V.
  11.417     50.6934      3.44  Q         .         .         .        V.
  11.500     50.7166      3.38  Q         .         .         .        V.
  11.583     50.7394      3.31  Q         .         .         .        V.
  11.667     50.7616      3.23  Q         .         .         .        V.
```

```
  11.750     50.7824      3.01  Q         .         .         .        V.
  11.833     50.8007      2.66  Q         .         .         .        V.
  11.917     50.8159      2.22  Q         .         .         .        V.
  12.000     50.8276      1.69  Q         .         .         .        V.
  12.083     50.8346      1.03  Q         .         .         .        V.
  12.167     50.8355      0.12  Q         .         .         .        V.

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      125.0     250.0     375.0     500.0
----------------------------------------------------------------------------
  12.250     50.8360      0.07  Q         .         .         .        V.
  12.333     50.8363      0.04  Q         .         .         .        V.
  12.417     50.8365      0.03  Q         .         .         .        V.
  12.500     50.8366      0.01  Q         .         .         .        V.
  12.583     50.8366      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
              0%                              755.0
             10%                              205.0
             20%                               85.0
             30%                               55.0
             40%                               45.0
             50%                               35.0
             60%                               25.0
             70%                               25.0
             80%                               15.0
             90%                               15.0
============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D    R O U T I N G    A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2017 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.1)
                 Release Date: 01/17/2017  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 10 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                            *
* 9571 - 1/17/17 - JO                                                       *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 11:09 01/24/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   32377.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16956.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1883.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3121.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.502 HOURS
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.51 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9912


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.608



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.846                696.788
        2                 6.732               1844.299
        3                14.631               2981.381
        4                27.118               4713.090
        5                38.690               4367.786
        6                46.572               2974.965
        7                52.450               2218.843
        8                56.615               1571.769
        9                60.034               1290.663
       10                63.123               1165.772
       11                65.720                980.377
       12                68.096                896.685
       13                70.200                794.404
       14                72.193                752.191
       15                73.868                632.191
       16                75.402                578.923
       17                76.836                541.441
       18                78.177                506.194
       19                79.375                452.067
       20                80.524                433.620
       21                81.628                416.846
       22                82.599                366.284
       23                83.497                338.855
       24                84.324                312.310
       25                85.062                278.667
       26                85.798                277.777
       27                86.475                255.583
       28                87.127                245.772
       29                87.777                245.554
       30                88.384                229.085
       31                88.967                219.939
       32                89.549                219.852
       33                90.114                213.327
       34                90.632                195.217
       35                91.147                194.416
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```
       36                91.662              194.419
       37                92.146              182.699
       38                92.575              162.192
       39                93.004              161.835
       40                93.433              161.749
       41                93.860              161.127
       42                94.223              136.981
       43                94.551              124.106
       44                94.880              124.109
       45                95.209              124.109
       46                95.538              124.195
       47                95.866              123.841
       48                96.142              104.224
       49                96.381               90.105
       50                96.620               90.284
       51                96.859               90.195
       52                97.098               90.108
       53                97.337               90.373
       54                97.576               90.019
       55                97.815               90.195
       56                98.008               72.974
       57                98.080               26.986
       58                98.145               24.682
       59                98.210               24.500
       60                98.276               24.857
       61                98.341               24.503
       62                98.406               24.500
       63                98.471               24.857
       64                98.537               24.679
       65                98.602               24.503
       66                98.667               24.679
       67                98.732               24.500
       68                98.797               24.682
       69                98.863               24.679
       70                98.928               24.679
       71                98.993               24.503
       72                99.059               24.679
       73                99.123               24.503
       74                99.188               24.503
       75                99.253               24.503
       76                99.318               24.503
       77                99.383               24.503
       78                99.448               24.503
       79                99.513               24.503
       80                99.578               24.503
       81                99.643               24.503
       82                99.708               24.503
       83                99.773               24.503
       84                99.838               24.503
       85                99.902               24.503
       86                99.967               24.503
       87               100.000               12.308


****************************************************************************
         UNIT              UNIT            UNIT               EFFECTIVE
        PERIOD           RAINFALL        SOIL-LOSS             RAINFALL
       (NUMBER)          (INCHES)         (INCHES)             (INCHES)
----------------------------------------------------------------------------
           1             0.0075           0.0067               0.0007
           2             0.0090           0.0081               0.0009
           3             0.0090           0.0081               0.0009
           4             0.0090           0.0081               0.0009
           5             0.0090           0.0081               0.0009
           6             0.0105           0.0094               0.0010
           7             0.0105           0.0094               0.0010
           8             0.0105           0.0094               0.0010
           9             0.0105           0.0094               0.0010
          10             0.0105           0.0094               0.0010
          11             0.0105           0.0094               0.0010
          12             0.0120           0.0108               0.0012
          13             0.0120           0.0108               0.0012
          14             0.0120           0.0108               0.0012
          15             0.0120           0.0108               0.0012
          16             0.0120           0.0108               0.0012
          17             0.0120           0.0108               0.0012
          18             0.0120           0.0108               0.0012
          19             0.0120           0.0108               0.0012
          20             0.0120           0.0108               0.0012
          21             0.0120           0.0108               0.0012
          22             0.0120           0.0108               0.0012
          23             0.0120           0.0108               0.0012
          24             0.0135           0.0121               0.0013
          25             0.0120           0.0108               0.0012
          26             0.0135           0.0121               0.0013
          27             0.0135           0.0121               0.0013
          28             0.0135           0.0121               0.0013
          29             0.0135           0.0121               0.0013
          30             0.0135           0.0121               0.0013
          31             0.0135           0.0121               0.0013
          32             0.0135           0.0121               0.0013
          33             0.0150           0.0135               0.0015
          34             0.0150           0.0135               0.0015
          35             0.0150           0.0135               0.0015
          36             0.0150           0.0135               0.0015
          37             0.0150           0.0135               0.0015
          38             0.0165           0.0148               0.0016
          39             0.0165           0.0148               0.0016
```

```
          40            0.0165          0.0148              0.0016
          41            0.0180          0.0162              0.0018
          42            0.0195          0.0175              0.0019
          43            0.0210          0.0189              0.0021
          44            0.0210          0.0189              0.0021
          45            0.0225          0.0196              0.0028
          46            0.0225          0.0196              0.0028
          47            0.0239          0.0196              0.0043
          48            0.0239          0.0196              0.0043
          49            0.0254          0.0196              0.0058
          50            0.0269          0.0196              0.0073
          51            0.0284          0.0196              0.0088
          52            0.0299          0.0196              0.0103
          53            0.0314          0.0196              0.0118
          54            0.0314          0.0196              0.0118
          55            0.0329          0.0196              0.0133
          56            0.0344          0.0196              0.0148
          57            0.0359          0.0196              0.0163
          58            0.0359          0.0196              0.0163
          59            0.0374          0.0196              0.0178
          60            0.0389          0.0196              0.0193
          61            0.0464          0.0196              0.0268
          62            0.0539          0.0196              0.0342
          63            0.0584          0.0196              0.0387
          64            0.0629          0.0196              0.0432
          65            0.0703          0.0196              0.0507
          66            0.0838          0.0196              0.0642
          67            0.0284          0.0196              0.0088
          68            0.0135          0.0121              0.0013
          69            0.0090          0.0081              0.0009
          70            0.0075          0.0067              0.0007
          71            0.0045          0.0040              0.0004
          72            0.0030          0.0027              0.0003

         TOTAL STORM RAINFALL(INCHES) =  1.50
         TOTAL SOIL-LOSS(INCHES) =  1.00
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.50

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     260.3882
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     128.8239
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      275.0     550.0     825.0    1100.0
----------------------------------------------------------------------------
   0.083      0.0036      0.52  Q         .         .         .         .
   0.167      0.0174      2.01  Q         .         .         .         .
   0.250      0.0485      4.51  Q         .         .         .         .
   0.333      0.1069      8.49  Q         .         .         .         .
   0.417      0.1928     12.46  Q         .         .         .         .
   0.500      0.2991     15.45  Q         .         .         .         .
   0.583      0.4219     17.83  Q         .         .         .         .
   0.667      0.5581     19.78  Q         .         .         .         .
   0.750      0.7075     21.69  Q         .         .         .         .
   0.833      0.8687     23.41  Q         .         .         .         .
   0.917      1.0392     24.76  Q         .         .         .         .
   1.000      1.2184     26.02  Q         .         .         .         .
   1.083      1.4061     27.26  Q         .         .         .         .
   1.167      1.6029     28.58  VQ        .         .         .         .
   1.250      1.8098     30.04  VQ        .         .         .         .
   1.333      2.0259     31.37  VQ        .         .         .         .
   1.417      2.2493     32.44  VQ        .         .         .         .
   1.500      2.4790     33.35  VQ        .         .         .         .
   1.583      2.7140     34.11  VQ        .         .         .         .
   1.667      2.9536     34.79  VQ        .         .         .         .
   1.750      3.1976     35.43  VQ        .         .         .         .
   1.833      3.4455     36.00  .Q        .         .         .         .
   1.917      3.6970     36.52  .Q        .         .         .         .
   2.000      3.9525     37.09  .Q        .         .         .         .
   2.083      4.2121     37.70  .Q        .         .         .         .
   2.167      4.4764     38.38  .Q        .         .         .         .
   2.250      4.7469     39.29  .Q        .         .         .         .
   2.333      5.0226     40.03  .Q        .         .         .         .
   2.417      5.3041     40.87  .Q        .         .         .         .
   2.500      5.5916     41.73  .Q        .         .         .         .
   2.583      5.8835     42.39  .Q        .         .         .         .
   2.667      6.1794     42.97  .Q        .         .         .         .
   2.750      6.4796     43.58  .QV       .         .         .         .
   2.833      6.7846     44.29  .QV       .         .         .         .
   2.917      7.0955     45.15  .QV       .         .         .         .
   3.000      7.4140     46.24  .QV       .         .         .         .
   3.083      7.7394     47.26  .QV       .         .         .         .
   3.167      8.0709     48.13  .QV       .         .         .         .
   3.250      8.4087     49.05  .QV       .         .         .         .
   3.333      8.7533     50.03  .QV       .         .         .         .
   3.417      9.1068     51.33  .QV       .         .         .         .
   3.500      9.4704     52.79  .QV       .         .         .         .
   3.583      9.8454     54.46  .Q V      .         .         .         .
   3.667     10.2351     56.58  . QV      .         .         .         .
   3.750     10.6447     59.47  . QV      .         .         .         .
```

```
   3.833     11.0795     63.13  . QV      .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      275.0     550.0     825.0    1100.0
----------------------------------------------------------------------------
   3.917     11.5495     68.24  . QV      .         .         .         .
   4.000     12.0718     75.84  . QV      .         .         .         .
   4.083     12.6617     85.65  .  Q      .         .         .         .
   4.167     13.3477     99.62  .  QV     .         .         .         .
   4.250     14.1527    116.88  .   Q     .         .         .         .
   4.333     15.1070    138.57  .   VQ    .         .         .         .
   4.417     16.2460    165.38  .    VQ   .         .         .         .
   4.500     17.5855    194.49  .    V Q  .         .         .         .
   4.583     19.1323    224.60  .    V  Q .         .         .         .
   4.667     20.8889    255.06  .     V  Q.         .         .         .
   4.750     22.8477    284.42  .      V  Q         .         .         .
   4.833     25.0159    314.82  .      V  .Q        .         .         .
   4.917     27.4042    346.78  .       V . Q       .         .         .
   5.000     30.0170    379.38  .        V.  Q      .         .         .
   5.083     32.8785    415.49  .         V    Q    .         .         .
   5.167     36.0781    464.58  .         .V    Q   .         .         .
   5.250     39.7457    532.53  .         . V      Q.         .         .
   5.333     44.0527    625.37  .         .  V      . Q       .         .
   5.417     49.1444    739.32  .         .    V    .     Q   .         .
   5.500     55.1217    867.91  .         .      V  .         .Q        .
   5.583     61.7993    969.58  .         .        V.         .    Q    .
   5.667     68.7628   1011.11  .         .         .V        .     Q   .
   5.750     75.5381    983.77  .         .         .  V      .    Q    .
   5.833     81.2267    825.99  .         .         .    V    Q         .
   5.917     85.6460    641.68  .         .         .  Q  V   .         .
   6.000     89.2012    516.21  .         .       Q .      V  .         .
   6.083     92.1479    427.86  .         .    Q    .       V .         .
   6.167     94.7164    372.95  .         .  Q      .        V.         .
   6.250     97.0092    332.92  .         . Q       .         V         .
   6.333     99.0532    296.78  .         Q         .         V         .
   6.417    100.9051    268.91  .        Q.         .         .V        .
   6.500    102.5890    244.50  .       Q .         .         .V        .
   6.583    104.1320    224.05  .       Q .         .         . V       .
   6.667    105.5361    203.87  .      Q  .         .         . V       .
   6.750    106.8374    188.95  .     Q   .         .         .  V      .
   6.833    108.0507    176.17  .     Q   .         .         .  V      .
   6.917    109.1815    164.19  .    Q    .         .         .  V      .
   7.000    110.2338    152.79  .    Q    .         .         .   V     .
   7.083    111.2217    143.44  .    Q    .         .         .   V     .
   7.167    112.1466    134.30  .   Q     .         .         .   V     .
   7.250    113.0065    124.87  .   Q     .         .         .    V    .
   7.333    113.8143    117.29  .   Q     .         .         .    V    .
   7.417    114.5767    110.70  .   Q     .         .         .    V    .
   7.500    115.2997    104.99  .  Q      .         .         .    V    .
   7.583    115.9944    100.88  .  Q      .         .         .     V   .
   7.667    116.6586     96.43  .  Q      .         .         .     V   .
   7.750    117.2978     92.82  .  Q      .         .         .     V   .
   7.833    117.9140     89.47  .  Q      .         .         .     V   .
   7.917    118.5044     85.72  .  Q      .         .         .     V   .
   8.000    119.0728     82.54  .  Q      .         .         .     V   .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      275.0     550.0     825.0    1100.0
----------------------------------------------------------------------------
   8.083    119.6213     79.64  . Q       .         .         .      V  .
   8.167    120.1464     76.24  . Q       .         .         .      V  .
   8.250    120.6470     72.68  . Q       .         .         .      V  .
   8.333    121.1286     69.92  . Q       .         .         .      V  .
   8.417    121.5904     67.06  . Q       .         .         .      V  .
   8.500    122.0286     63.63  . Q       .         .         .      V  .
   8.583    122.4432     60.19  . Q       .         .         .       V .
   8.667    122.8404     57.68  . Q       .         .         .       V .
   8.750    123.2197     55.07  . Q       .         .         .       V .
   8.833    123.5786     52.11  .Q        .         .         .       V .
   8.917    123.9134     48.62  .Q        .         .         .       V .
   9.000    124.2304     46.03  .Q        .         .         .       V .
   9.083    124.5336     44.02  .Q        .         .         .       V .
   9.167    124.8221     41.90  .Q        .         .         .       V .
   9.250    125.0945     39.54  .Q        .         .         .       V .
   9.333    125.3484     36.87  .Q        .         .         .       V .
   9.417    125.5811     33.79  .Q        .         .         .       V .
   9.500    125.7986     31.58  .Q        .         .         .        V.
   9.583    126.0067     30.22  .Q        .         .         .        V.
   9.667    126.2047     28.75  .Q        .         .         .        V.
   9.750    126.3895     26.82  Q         .         .         .        V.
   9.833    126.5580     24.47  Q         .         .         .        V.
   9.917    126.7082     21.81  Q         .         .         .        V.
  10.000    126.8378     18.82  Q         .         .         .        V.
  10.083    126.9428     15.25  Q         .         .         .        V.
  10.167    127.0253     11.98  Q         .         .         .        V.
  10.250    127.1036     11.37  Q         .         .         .        V.
  10.333    127.1809     11.23  Q         .         .         .        V.
  10.417    127.2577     11.14  Q         .         .         .        V.
  10.500    127.3337     11.04  Q         .         .         .        V.
  10.583    127.4092     10.97  Q         .         .         .        V.
  10.667    127.4844     10.92  Q         .         .         .        V.
  10.750    127.5592     10.85  Q         .         .         .        V.
  10.833    127.6335     10.80  Q         .         .         .        V.
  10.917    127.7075     10.74  Q         .         .         .        V.
  11.000    127.7810     10.67  Q         .         .         .        V.
  11.083    127.8538     10.58  Q         .         .         .        V.
  11.167    127.9259     10.47  Q         .         .         .        V.
  11.250    127.9972     10.34  Q         .         .         .        V.
  11.333    128.0672     10.17  Q         .         .         .        V.
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  11.417    128.1359      9.97  Q         .         .         .        V.
  11.500    128.2029      9.73  Q         .         .         .        V.
  11.583    128.2680      9.46  Q         .         .         .        V.
  11.667    128.3311      9.17  Q         .         .         .        V.
  11.750    128.3921      8.86  Q         .         .         .        V.
  11.833    128.4508      8.52  Q         .         .         .        V.
  11.917    128.5068      8.13  Q         .         .         .        V.
  12.000    128.5601      7.74  Q         .         .         .        V.
  12.083    128.6105      7.32  Q         .         .         .        V.
  12.167    128.6577      6.86  Q         .         .         .        V.

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      275.0     550.0     825.0    1100.0
----------------------------------------------------------------------------
  12.250    128.7011      6.30  Q         .         .         .        V.
  12.333    128.7393      5.55  Q         .         .         .        V.
  12.417    128.7714      4.66  Q         .         .         .        V.
  12.500    128.7966      3.65  Q         .         .         .        V.
  12.583    128.8139      2.50  Q         .         .         .        V.
  12.667    128.8214      1.10  Q         .         .         .        V.
  12.750    128.8228      0.20  Q         .         .         .        V.
  12.833    128.8233      0.08  Q         .         .         .        V.
  12.917    128.8236      0.05  Q         .         .         .        V.
  13.000    128.8238      0.03  Q         .         .         .        V.
  13.083    128.8239      0.01  Q         .         .         .        V.
  13.167    128.8239      0.00  Q         .         .         .        V.
-------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
              0%                              790.0
             10%                              200.0
             20%                              130.0
             30%                               90.0
             40%                               65.0
             50%                               50.0
             60%                               40.0
             70%                               30.0
             80%                               25.0
             90%                               15.0
============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2017 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.1)
                 Release Date: 01/17/2017  License ID 1419

                           Analysis prepared by:






 ************************** DESCRIPTION OF STUDY **************************
* 5 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                           *
* 9571 - 1/17/17 - JO                                                      *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 11:10 01/24/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   32377.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16956.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1883.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3121.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.502 HOURS
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  1.20 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9912


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.608



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.846                696.788
        2                 6.732               1844.299
        3                14.631               2981.381
        4                27.118               4713.090
        5                38.690               4367.786
        6                46.572               2974.965
        7                52.450               2218.843
        8                56.615               1571.769
        9                60.034               1290.663
       10                63.123               1165.772
       11                65.720                980.377
       12                68.096                896.685
       13                70.200                794.404
       14                72.193                752.191
       15                73.868                632.191
       16                75.402                578.923
       17                76.836                541.441
       18                78.177                506.194
       19                79.375                452.067
       20                80.524                433.620
       21                81.628                416.846
       22                82.599                366.284
       23                83.497                338.855
       24                84.324                312.310
       25                85.062                278.667
       26                85.798                277.777
       27                86.475                255.583
       28                87.127                245.772
       29                87.777                245.554
       30                88.384                229.085
       31                88.967                219.939
       32                89.549                219.852
       33                90.114                213.327
       34                90.632                195.217
       35                91.147                194.416
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       36                91.662                194.419
       37                92.146                182.699
       38                92.575                162.192
       39                93.004                161.835
       40                93.433                161.749
       41                93.860                161.127
       42                94.223                136.981
       43                94.551                124.106
       44                94.880                124.109
       45                95.209                124.109
       46                95.538                124.195
       47                95.866                123.841
       48                96.142                104.224
       49                96.381                 90.105
       50                96.620                 90.284
       51                96.859                 90.195
       52                97.098                 90.108
       53                97.337                 90.373
       54                97.576                 90.019
       55                97.815                 90.195
       56                98.008                 72.974
       57                98.080                 26.986
       58                98.145                 24.682
       59                98.210                 24.500
       60                98.276                 24.857
       61                98.341                 24.503
       62                98.406                 24.500
       63                98.471                 24.857
       64                98.537                 24.679
       65                98.602                 24.503
       66                98.667                 24.679
       67                98.732                 24.500
       68                98.797                 24.682
       69                98.863                 24.679
       70                98.928                 24.679
       71                98.993                 24.503
       72                99.059                 24.679
       73                99.123                 24.503
       74                99.188                 24.503
       75                99.253                 24.503
       76                99.318                 24.503
       77                99.383                 24.503
       78                99.448                 24.503
       79                99.513                 24.503
       80                99.578                 24.503
       81                99.643                 24.503
       82                99.708                 24.503
       83                99.773                 24.503
       84                99.838                 24.503
       85                99.902                 24.503
       86                99.967                 24.503
       87               100.000                 12.308


****************************************************************************
         UNIT              UNIT            UNIT              EFFECTIVE
        PERIOD           RAINFALL       SOIL-LOSS            RAINFALL
       (NUMBER)          (INCHES)        (INCHES)            (INCHES)
----------------------------------------------------------------------------
           1             0.0059           0.0054              0.0006
           2             0.0071           0.0064              0.0007
           3             0.0071           0.0064              0.0007
           4             0.0071           0.0064              0.0007
           5             0.0071           0.0064              0.0007
           6             0.0083           0.0075              0.0008
           7             0.0083           0.0075              0.0008
           8             0.0083           0.0075              0.0008
           9             0.0083           0.0075              0.0008
          10             0.0083           0.0075              0.0008
          11             0.0083           0.0075              0.0008
          12             0.0095           0.0086              0.0010
          13             0.0095           0.0086              0.0010
          14             0.0095           0.0086              0.0010
          15             0.0095           0.0086              0.0010
          16             0.0095           0.0086              0.0010
          17             0.0095           0.0086              0.0010
          18             0.0095           0.0086              0.0010
          19             0.0095           0.0086              0.0010
          20             0.0095           0.0086              0.0010
          21             0.0095           0.0086              0.0010
          22             0.0095           0.0086              0.0010
          23             0.0095           0.0086              0.0010
          24             0.0107           0.0096              0.0011
          25             0.0095           0.0086              0.0010
          26             0.0107           0.0096              0.0011
          27             0.0107           0.0096              0.0011
          28             0.0107           0.0096              0.0011
          29             0.0107           0.0096              0.0011
          30             0.0107           0.0096              0.0011
          31             0.0107           0.0096              0.0011
          32             0.0107           0.0096              0.0011
          33             0.0119           0.0107              0.0012
          34             0.0119           0.0107              0.0012
          35             0.0119           0.0107              0.0012
          36             0.0119           0.0107              0.0012
          37             0.0119           0.0107              0.0012
          38             0.0131           0.0118              0.0013
          39             0.0131           0.0118              0.0013
```

```
          40            0.0131          0.0118              0.0013
          41            0.0143          0.0128              0.0014
          42            0.0155          0.0139              0.0015
          43            0.0167          0.0150              0.0017
          44            0.0167          0.0150              0.0017
          45            0.0178          0.0161              0.0018
          46            0.0178          0.0161              0.0018
          47            0.0190          0.0171              0.0019
          48            0.0190          0.0171              0.0019
          49            0.0202          0.0182              0.0020
          50            0.0214          0.0193              0.0021
          51            0.0226          0.0196              0.0030
          52            0.0238          0.0196              0.0042
          53            0.0250          0.0196              0.0053
          54            0.0250          0.0196              0.0053
          55            0.0262          0.0196              0.0065
          56            0.0274          0.0196              0.0077
          57            0.0285          0.0196              0.0089
          58            0.0285          0.0196              0.0089
          59            0.0297          0.0196              0.0101
          60            0.0309          0.0196              0.0113
          61            0.0369          0.0196              0.0172
          62            0.0428          0.0196              0.0232
          63            0.0464          0.0196              0.0268
          64            0.0500          0.0196              0.0303
          65            0.0559          0.0196              0.0363
          66            0.0666          0.0196              0.0470
          67            0.0226          0.0196              0.0030
          68            0.0107          0.0096              0.0011
          69            0.0071          0.0064              0.0007
          70            0.0059          0.0054              0.0006
          71            0.0036          0.0032              0.0004
          72            0.0024          0.0021              0.0002

         TOTAL STORM RAINFALL(INCHES) =  1.19
         TOTAL SOIL-LOSS(INCHES) =  0.87
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.32

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     227.4116
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      81.9067
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
----------------------------------------------------------------------------
   0.083      0.0029      0.41  Q         .         .         .         .
   0.167      0.0138      1.59  Q         .         .         .         .
   0.250      0.0385      3.59  Q         .         .         .         .
   0.333      0.0850      6.74  Q         .         .         .         .
   0.417      0.1532      9.90  Q         .         .         .         .
   0.500      0.2377     12.27  Q         .         .         .         .
   0.583      0.3353     14.17  Q         .         .         .         .
   0.667      0.4436     15.72  Q         .         .         .         .
   0.750      0.5623     17.24  Q         .         .         .         .
   0.833      0.6904     18.60  VQ        .         .         .         .
   0.917      0.8259     19.68  VQ        .         .         .         .
   1.000      0.9683     20.67  VQ        .         .         .         .
   1.083      1.1174     21.66  VQ        .         .         .         .
   1.167      1.2739     22.71  VQ        .         .         .         .
   1.250      1.4383     23.87  VQ        .         .         .         .
   1.333      1.6100     24.93  VQ        .         .         .         .
   1.417      1.7875     25.78  VQ        .         .         .         .
   1.500      1.9701     26.51  VQ        .         .         .         .
   1.583      2.1568     27.11  .Q        .         .         .         .
   1.667      2.3472     27.65  .Q        .         .         .         .
   1.750      2.5412     28.16  .Q        .         .         .         .
   1.833      2.7382     28.61  .Q        .         .         .         .
   1.917      2.9380     29.02  .Q        .         .         .         .
   2.000      3.1410     29.48  .Q        .         .         .         .
   2.083      3.3473     29.96  .Q        .         .         .         .
   2.167      3.5574     30.50  .Q        .         .         .         .
   2.250      3.7724     31.22  .Q        .         .         .         .
   2.333      3.9915     31.82  .Q        .         .         .         .
   2.417      4.2152     32.48  .QV       .         .         .         .
   2.500      4.4436     33.16  .QV       .         .         .         .
   2.583      4.6756     33.68  .QV       .         .         .         .
   2.667      4.9108     34.15  .QV       .         .         .         .
   2.750      5.1493     34.63  .QV       .         .         .         .
   2.833      5.3917     35.19  . Q       .         .         .         .
   2.917      5.6388     35.88  . Q       .         .         .         .
   3.000      5.8919     36.74  . Q       .         .         .         .
   3.083      6.1505     37.56  . QV      .         .         .         .
   3.167      6.4139     38.25  . QV      .         .         .         .
   3.250      6.6824     38.98  . QV      .         .         .         .
   3.333      6.9563     39.76  . QV      .         .         .         .
   3.417      7.2372     40.79  . QV      .         .         .         .
   3.500      7.5261     41.96  . QV      .         .         .         .
   3.583      7.8242     43.28  . QV      .         .         .         .
   3.667      8.1339     44.97  . QV      .         .         .         .
   3.750      8.4572     46.94  . Q V     .         .         .         .
```

```
   3.833      8.7947     49.02  . Q V     .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
----------------------------------------------------------------------------
   3.917      9.1458     50.97  . Q V     .         .         .         .
   4.000      9.5101     52.89  .  QV     .         .         .         .
   4.083      9.8872     54.76  .  QV     .         .         .         .
   4.167     10.2780     56.74  .  Q V    .         .         .         .
   4.250     10.6868     59.36  .  Q V    .         .         .         .
   4.333     11.1260     63.78  .  Q V    .         .         .         .
   4.417     11.6172     71.32  .   QV    .         .         .         .
   4.500     12.1865     82.67  .   QV    .         .         .         .
   4.583     12.8588     97.62  .    QV   .         .         .         .
   4.667     13.6510    115.02  .     Q   .         .         .         .
   4.750     14.5675    133.08  .      Q  .         .         .         .
   4.833     15.6194    152.73  .      VQ .         .         .         .
   4.917     16.8192    174.22  .       VQ.         .         .         .
   5.000     18.1734    196.63  .       V .Q        .         .         .
   5.083     19.7040    222.24  .        V. Q       .         .         .
   5.167     21.4837    258.41  .         V   Q     .         .         .
   5.250     23.6177    309.86  .         .V     Q  .         .         .
   5.333     26.2440    381.33  .         . V       .Q        .         .
   5.417     29.4794    469.78  .         .   V     .     Q   .         .
   5.500     33.4051    570.01  .         .     V   .         . Q       .
   5.583     37.8746    648.98  .         .       V .         .      Q  .
   5.667     42.5793    683.13  .         .         V         .        Q.
   5.750     47.1749    667.27  .         .         .  V      .       Q .
   5.833     50.9796    552.44  .         .         .   V     .Q        .
   5.917     53.8973    423.65  .         .         .   Q V   .         .
   6.000     56.2409    340.30  .         .        Q.      V  .         .
   6.083     58.1758    280.94  .         .     Q   .       V .         .
   6.167     59.8642    245.17  .         .   Q     .        V.         .
   6.250     61.3701    218.66  .         . Q       .        V.         .
   6.333     62.7073    194.16  .         .Q        .         V         .
   6.417     63.9177    175.75  .         Q         .         .V        .
   6.500     65.0154    159.38  .        Q.         .         .V        .
   6.583     66.0199    145.86  .       Q .         .         . V       .
   6.667     66.9303    132.18  .      Q  .         .         . V       .
   6.750     67.7740    122.52  .      Q  .         .         .  V      .
   6.833     68.5599    114.11  .     Q   .         .         .  V      .
   6.917     69.2910    106.15  .     Q   .         .         .  V      .
   7.000     69.9697     98.54  .    Q    .         .         .   V     .
   7.083     70.6062     92.43  .    Q    .         .         .   V     .
   7.167     71.2007     86.31  .   Q     .         .         .   V     .
   7.250     71.7511     79.93  .   Q     .         .         .    V    .
   7.333     72.2675     74.97  .   Q     .         .         .    V    .
   7.417     72.7538     70.62  .   Q     .         .         .    V    .
   7.500     73.2144     66.88  .  Q      .         .         .    V    .
   7.583     73.6575     64.34  .  Q      .         .         .    V    .
   7.667     74.0807     61.44  .  Q      .         .         .     V   .
   7.750     74.4884     59.20  .  Q      .         .         .     V   .
   7.833     74.8817     57.11  .  Q      .         .         .     V   .
   7.917     75.2582     54.67  .  Q      .         .         .     V   .
   8.000     75.6212     52.71  .  Q      .         .         .     V   .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
----------------------------------------------------------------------------
   8.083     75.9720     50.94  . Q       .         .         .      V  .
   8.167     76.3078     48.75  . Q       .         .         .      V  .
   8.250     76.6276     46.44  . Q       .         .         .      V  .
   8.333     76.9359     44.76  . Q       .         .         .      V  .
   8.417     77.2315     42.93  . Q       .         .         .      V  .
   8.500     77.5117     40.68  . Q       .         .         .      V  .
   8.583     77.7766     38.46  . Q       .         .         .      V  .
   8.667     78.0311     36.96  . Q       .         .         .       V .
   8.750     78.2746     35.36  . Q       .         .         .       V .
   8.833     78.5056     33.54  .Q        .         .         .       V .
   8.917     78.7212     31.31  .Q        .         .         .       V .
   9.000     78.9265     29.81  .Q        .         .         .       V .
   9.083     79.1239     28.66  .Q        .         .         .       V .
   9.167     79.3125     27.38  .Q        .         .         .       V .
   9.250     79.4909     25.91  .Q        .         .         .       V .
   9.333     79.6575     24.19  .Q        .         .         .       V .
   9.417     79.8100     22.14  .Q        .         .         .       V .
   9.500     79.9531     20.78  .Q        .         .         .        V.
   9.583     80.0910     20.02  .Q        .         .         .        V.
   9.667     80.2226     19.12  .Q        .         .         .        V.
   9.750     80.3456     17.85  .Q        .         .         .        V.
   9.833     80.4575     16.25  Q         .         .         .        V.
   9.917     80.5566     14.39  Q         .         .         .        V.
  10.000     80.6412     12.29  Q         .         .         .        V.
  10.083     80.7081      9.71  Q         .         .         .        V.
  10.167     80.7589      7.38  Q         .         .         .        V.
  10.250     80.8077      7.09  Q         .         .         .        V.
  10.333     80.8558      6.99  Q         .         .         .        V.
  10.417     80.9035      6.91  Q         .         .         .        V.
  10.500     80.9505      6.83  Q         .         .         .        V.
  10.583     80.9972      6.78  Q         .         .         .        V.
  10.667     81.0437      6.74  Q         .         .         .        V.
  10.750     81.0898      6.69  Q         .         .         .        V.
  10.833     81.1355      6.65  Q         .         .         .        V.
  10.917     81.1810      6.61  Q         .         .         .        V.
  11.000     81.2262      6.56  Q         .         .         .        V.
  11.083     81.2711      6.52  Q         .         .         .        V.
  11.167     81.3156      6.47  Q         .         .         .        V.
  11.250     81.3598      6.41  Q         .         .         .        V.
  11.333     81.4036      6.36  Q         .         .         .        V.
```

```
   11.417     81.4469      6.29  Q        .         .         .        V.
   11.500     81.4896      6.20  Q        .         .         .        V.
   11.583     81.5315      6.08  Q        .         .         .        V.
   11.667     81.5725      5.95  Q        .         .         .        V.
   11.750     81.6125      5.81  Q        .         .         .        V.
   11.833     81.6513      5.63  Q        .         .         .        V.
   11.917     81.6886      5.43  Q        .         .         .        V.
   12.000     81.7245      5.21  Q        .         .         .        V.
   12.083     81.7588      4.98  Q        .         .         .        V.
   12.167     81.7913      4.71  Q        .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      175.0     350.0     525.0     700.0
 ----------------------------------------------------------------------------
   12.250     81.8213      4.36  Q        .         .         .        V.
   12.333     81.8480      3.87  Q        .         .         .        V.
   12.417     81.8704      3.26  Q        .         .         .        V.
   12.500     81.8880      2.56  Q        .         .         .        V.
   12.583     81.9000      1.74  Q        .         .         .        V.
   12.667     81.9050      0.72  Q        .         .         .        V.
   12.750     81.9058      0.11  Q        .         .         .        V.
   12.833     81.9062      0.06  Q        .         .         .        V.
   12.917     81.9064      0.04  Q        .         .         .        V.
   13.000     81.9066      0.02  Q        .         .         .        V.
   13.083     81.9067      0.01  Q        .         .         .        V.
   13.167     81.9067      0.00  Q        .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
               0%                             790.0
              10%                             185.0
              20%                             110.0
              30%                              75.0
              40%                              55.0
              50%                              40.0
              60%                              35.0
              70%                              25.0
              80%                              25.0
              90%                              15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

```
       36                91.662                194.419
       37                92.146                182.699
       38                92.575                162.192
       39                93.004                161.835
       40                93.433                161.749
       41                93.860                161.127
       42                94.223                136.981
       43                94.551                124.106
       44                94.880                124.109
       45                95.209                124.109
       46                95.538                124.195
       47                95.866                123.841
       48                96.142                104.224
       49                96.381                 90.105
       50                96.620                 90.284
       51                96.859                 90.195
       52                97.098                 90.108
       53                97.337                 90.373
       54                97.576                 90.019
       55                97.815                 90.195
       56                98.008                 72.974
       57                98.080                 26.986
       58                98.145                 24.682
       59                98.210                 24.500
       60                98.276                 24.857
       61                98.341                 24.503
       62                98.406                 24.500
       63                98.471                 24.857
       64                98.537                 24.679
       65                98.602                 24.503
       66                98.667                 24.679
       67                98.732                 24.500
       68                98.797                 24.682
       69                98.863                 24.679
       70                98.928                 24.679
       71                98.993                 24.503
       72                99.059                 24.679
       73                99.123                 24.503
       74                99.188                 24.503
       75                99.253                 24.503
       76                99.318                 24.503
       77                99.383                 24.503
       78                99.448                 24.503
       79                99.513                 24.503
       80                99.578                 24.503
       81                99.643                 24.503
       82                99.708                 24.503
       83                99.773                 24.503
       84                99.838                 24.503
       85                99.902                 24.503
       86                99.967                 24.503
       87               100.000                 12.308


****************************************************************************
         UNIT              UNIT            UNIT              EFFECTIVE
        PERIOD           RAINFALL       SOIL-LOSS            RAINFALL
       (NUMBER)          (INCHES)        (INCHES)            (INCHES)
----------------------------------------------------------------------------
           1             0.0042           0.0038              0.0004
           2             0.0051           0.0046              0.0005
           3             0.0051           0.0046              0.0005
           4             0.0051           0.0046              0.0005
           5             0.0051           0.0046              0.0005
           6             0.0059           0.0053              0.0006
           7             0.0059           0.0053              0.0006
           8             0.0059           0.0053              0.0006
           9             0.0059           0.0053              0.0006
          10             0.0059           0.0053              0.0006
          11             0.0059           0.0053              0.0006
          12             0.0068           0.0061              0.0007
          13             0.0068           0.0061              0.0007
          14             0.0068           0.0061              0.0007
          15             0.0068           0.0061              0.0007
          16             0.0068           0.0061              0.0007
          17             0.0068           0.0061              0.0007
          18             0.0068           0.0061              0.0007
          19             0.0068           0.0061              0.0007
          20             0.0068           0.0061              0.0007
          21             0.0068           0.0061              0.0007
          22             0.0068           0.0061              0.0007
          23             0.0068           0.0061              0.0007
          24             0.0076           0.0068              0.0008
          25             0.0068           0.0061              0.0007
          26             0.0076           0.0068              0.0008
          27             0.0076           0.0068              0.0008
          28             0.0076           0.0068              0.0008
          29             0.0076           0.0068              0.0008
          30             0.0076           0.0068              0.0008
          31             0.0076           0.0068              0.0008
          32             0.0076           0.0068              0.0008
          33             0.0085           0.0076              0.0008
          34             0.0085           0.0076              0.0008
          35             0.0085           0.0076              0.0008
          36             0.0085           0.0076              0.0008
          37             0.0085           0.0076              0.0008
          38             0.0093           0.0084              0.0009
          39             0.0093           0.0084              0.0009
```

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****************************************************************************

              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                     (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2017 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.1)
                 Release Date: 01/17/2017  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 2 YR - 6 HR                                                              *
* US GYPSUM - PROPOSED CONDITION                                           *
* 9571 - 1/17/17 - JO                                                      *
 **************************************************************************

  FILE NAME: TOTAL2.DAT
  TIME/DATE OF STUDY: 11:11 01/24/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   32377.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   16956.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1883.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3121.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.502 HOURS
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  0.85 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9912


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.608



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                 1.846                696.788
        2                 6.732               1844.299
        3                14.631               2981.381
        4                27.118               4713.090
        5                38.690               4367.786
        6                46.572               2974.965
        7                52.450               2218.843
        8                56.615               1571.769
        9                60.034               1290.663
       10                63.123               1165.772
       11                65.720                980.377
       12                68.096                896.685
       13                70.200                794.404
       14                72.193                752.191
       15                73.868                632.191
       16                75.402                578.923
       17                76.836                541.441
       18                78.177                506.194
       19                79.375                452.067
       20                80.524                433.620
       21                81.628                416.846
       22                82.599                366.284
       23                83.497                338.855
       24                84.324                312.310
       25                85.062                278.667
       26                85.798                277.777
       27                86.475                255.583
       28                87.127                245.772
       29                87.777                245.554
       30                88.384                229.085
       31                88.967                219.939
       32                89.549                219.852
       33                90.114                213.327
       34                90.632                195.217
       35                91.147                194.416
```

```
   11.750    265.8043     11.97  Q         .         .         .        V.
   11.833    265.8748     10.25  Q         .         .         .        V.
   11.917    265.9322      8.33  Q         .         .         .        V.
   12.000    265.9750      6.21  Q         .         .         .        V.
   12.083    266.0009      3.77  Q         .         .         .        V.
   12.167    266.0061      0.76  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      500.0    1000.0    1500.0    2000.0
 ----------------------------------------------------------------------------
   12.250    266.0073      0.16  Q         .         .         .        V.
   12.333    266.0080      0.10  Q         .         .         .        V.
   12.417    266.0085      0.07  Q         .         .         .        V.
   12.500    266.0087      0.03  Q         .         .         .        V.
   12.583    266.0088      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
               0%                             755.0
              10%                             225.0
              20%                             140.0
              30%                             105.0
              40%                              75.0
              50%                              50.0
              60%                              35.0
              70%                              30.0
              80%                              20.0
              90%                              15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

```
          40              0.0093           0.0084              0.0009
          41              0.0101           0.0091              0.0010
          42              0.0110           0.0099              0.0011
          43              0.0118           0.0107              0.0012
          44              0.0118           0.0107              0.0012
          45              0.0127           0.0114              0.0013
          46              0.0127           0.0114              0.0013
          47              0.0135           0.0122              0.0014
          48              0.0135           0.0122              0.0014
          49              0.0144           0.0129              0.0014
          50              0.0152           0.0137              0.0015
          51              0.0161           0.0145              0.0016
          52              0.0169           0.0152              0.0017
          53              0.0178           0.0160              0.0018
          54              0.0178           0.0160              0.0018
          55              0.0186           0.0167              0.0019
          56              0.0194           0.0175              0.0019
          57              0.0203           0.0183              0.0020
          58              0.0203           0.0183              0.0020
          59              0.0211           0.0190              0.0021
          60              0.0220           0.0196              0.0023
          61              0.0262           0.0196              0.0066
          62              0.0304           0.0196              0.0108
          63              0.0330           0.0196              0.0133
          64              0.0355           0.0196              0.0159
          65              0.0397           0.0196              0.0201
          66              0.0473           0.0196              0.0277
          67              0.0161           0.0145              0.0016
          68              0.0076           0.0068              0.0008
          69              0.0051           0.0046              0.0005
          70              0.0042           0.0038              0.0004
          71              0.0025           0.0023              0.0003
          72              0.0017           0.0015              0.0002

         TOTAL STORM RAINFALL(INCHES) =  0.85
         TOTAL SOIL-LOSS(INCHES) =  0.69
         TOTAL EFFECTIVE RAINFALL(INCHES) =  0.16

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     178.8355
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =      41.0470
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
----------------------------------------------------------------------------
   0.083      0.0020      0.29 Q         .         .         .         .
   0.167      0.0098      1.13 Q         .         .         .         .
   0.250      0.0274      2.55 Q         .         .         .         .
   0.333      0.0604      4.79 Q         .         .         .         .
   0.417      0.1089      7.04 Q         .         .         .         .
   0.500      0.1690      8.72 Q         .         .         .         .
   0.583      0.2383     10.07 VQ        .         .         .         .
   0.667      0.3153     11.17 VQ        .         .         .         .
   0.750      0.3997     12.25 VQ        .         .         .         .
   0.833      0.4907     13.22 VQ        .         .         .         .
   0.917      0.5871     13.99 VQ        .         .         .         .
   1.000      0.6883     14.70 VQ        .         .         .         .
   1.083      0.7943     15.40 VQ        .         .         .         .
   1.167      0.9055     16.14 VQ        .         .         .         .
   1.250      1.0224     16.97 VQ        .         .         .         .
   1.333      1.1444     17.72 .Q        .         .         .         .
   1.417      1.2706     18.33 .Q        .         .         .         .
   1.500      1.4004     18.84 .Q        .         .         .         .
   1.583      1.5331     19.27 .Q        .         .         .         .
   1.667      1.6685     19.66 .Q        .         .         .         .
   1.750      1.8063     20.02 .VQ       .         .         .         .
   1.833      1.9464     20.33 .VQ       .         .         .         .
   1.917      2.0884     20.63 . Q       .         .         .         .
   2.000      2.2327     20.95 . Q       .         .         .         .
   2.083      2.3794     21.29 . Q       .         .         .         .
   2.167      2.5287     21.68 . Q       .         .         .         .
   2.250      2.6815     22.19 . Q       .         .         .         .
   2.333      2.8373     22.62 . Q       .         .         .         .
   2.417      2.9963     23.09 . Q       .         .         .         .
   2.500      3.1587     23.57 . QV      .         .         .         .
   2.583      3.3236     23.94 . QV      .         .         .         .
   2.667      3.4908     24.28 . QV      .         .         .         .
   2.750      3.6603     24.62 . QV      .         .         .         .
   2.833      3.8326     25.02 . QV      .         .         .         .
   2.917      4.0083     25.51 . QV      .         .         .         .
   3.000      4.1881     26.12 . Q V     .         .         .         .
   3.083      4.3720     26.70 . Q V     .         .         .         .
   3.167      4.5592     27.19 . Q V     .         .         .         .
   3.250      4.7501     27.71 . Q V     .         .         .         .
   3.333      4.9447     28.26 . Q V     .         .         .         .
   3.417      5.1444     28.99 . Q  V    .         .         .         .
   3.500      5.3498     29.82 . Q  V    .         .         .         .
   3.583      5.5617     30.76 .  Q V    .         .         .         .
   3.667      5.7818     31.96 .  Q V    .         .         .         .
   3.750      6.0116     33.37 .  Q V    .         .         .         .
```

```
   3.833      6.2516     34.84  .  Q  V   .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
----------------------------------------------------------------------------
   3.917      6.5011     36.23  .  Q  V   .         .         .         .
   4.000      6.7601     37.60  .  Q  V   .         .         .         .
   4.083      7.0282     38.93  .  Q  V   .         .         .         .
   4.167      7.3059     40.33  .   Q  V  .         .         .         .
   4.250      7.5941     41.84  .   Q  V  .         .         .         .
   4.333      7.8939     43.53  .   Q  V  .         .         .         .
   4.417      8.2070     45.46  .   Q  V  .         .         .         .
   4.500      8.5340     47.48  .   Q   V .         .         .         .
   4.583      8.8752     49.53  .   Q   V .         .         .         .
   4.667      9.2303     51.57  .    Q  V .         .         .         .
   4.750      9.5987     53.50  .    Q   V.         .         .         .
   4.833      9.9807     55.47  .    Q   V.         .         .         .
   4.917     10.3768     57.50  .    Q    V         .         .         .
   5.000     10.7877     59.66  .    Q    V         .         .         .
   5.083     11.2342     64.84  .     Q   V         .         .         .
   5.167     11.7708     77.92  .      Q  .V        .         .         .
   5.250     12.4774    102.60  .         Q V       .         .         .
   5.333     13.4674    143.75  .         .  VQ     .         .         .
   5.417     14.8380    199.01  .         .   V    Q.         .         .
   5.500     16.6565    264.05  .         .     V   .     Q   .         .
   5.583     18.8509    318.62  .         .       V .         .Q        .
   5.667     21.2486    348.15  .         .         V         .   Q     .
   5.750     23.6529    349.10  .         .         .  V      .   Q     .
   5.833     25.6476    289.64  .         .         .   V   Q .         .
   5.917     27.1607    219.69  .         .         .Q    V   .         .
   6.000     28.3652    174.91  .         .      Q  .      V  .         .
   6.083     29.3490    142.84  .         .   Q     .       V .         .
   6.167     30.2036    124.09  .         . Q       .        V.         .
   6.250     30.9633    110.32  .         .Q        .         V         .
   6.333     31.6338     97.35  .        Q.         .         V         .
   6.417     32.2390     87.87  .       Q .         .         .V        .
   6.500     32.7862     79.46  .      Q  .         .         .V        .
   6.583     33.2863     72.62  .      Q  .         .         . V       .
   6.667     33.7374     65.50  .     Q   .         .         . V       .
   6.750     34.1555     60.71  .     Q   .         .         .  V      .
   6.833     34.5450     56.56  .    Q    .         .         .  V      .
   6.917     34.9071     52.58  .    Q    .         .         .   V     .
   7.000     35.2426     48.71  .   Q     .         .         .   V     .
   7.083     35.5570     45.66  .   Q     .         .         .   V     .
   7.167     35.8499     42.53  .   Q     .         .         .   V     .
   7.250     36.1195     39.14  .  Q      .         .         .    V    .
   7.333     36.3713     36.56  .  Q      .         .         .    V    .
   7.417     36.6075     34.29  .  Q      .         .         .    V    .
   7.500     36.8302     32.34  .  Q      .         .         .    V    .
   7.583     37.0443     31.08  .  Q      .         .         .     V   .
   7.667     37.2481     29.59  . Q       .         .         .     V   .
   7.750     37.4445     28.52  . Q       .         .         .     V   .
   7.833     37.6342     27.54  . Q       .         .         .     V   .
   7.917     37.8155     26.32  . Q       .         .         .     V   .
   8.000     37.9904     25.40  . Q       .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
----------------------------------------------------------------------------
   8.083     38.1598     24.60  . Q       .         .         .      V  .
   8.167     38.3219     23.54  . Q       .         .         .      V  .
   8.250     38.4761     22.39  . Q       .         .         .      V  .
   8.333     38.6251     21.63  . Q       .         .         .      V  .
   8.417     38.7683     20.79  . Q       .         .         .      V  .
   8.500     38.9038     19.67  .Q        .         .         .      V  .
   8.583     39.0315     18.54  .Q        .         .         .       V .
   8.667     39.1544     17.84  .Q        .         .         .       V .
   8.750     39.2719     17.06  .Q        .         .         .       V .
   8.833     39.3831     16.15  .Q        .         .         .       V .
   8.917     39.4865     15.01  .Q        .         .         .       V .
   9.000     39.5851     14.31  .Q        .         .         .       V .
   9.083     39.6803     13.83  .Q        .         .         .       V .
   9.167     39.7716     13.25  .Q        .         .         .       V .
   9.250     39.8583     12.59  .Q        .         .         .       V .
   9.333     39.9396     11.81  .Q        .         .         .       V .
   9.417     40.0142     10.82  .Q        .         .         .       V .
   9.500     40.0848     10.25  .Q        .         .         .        V.
   9.583     40.1540     10.05  .Q        .         .         .        V.
   9.667     40.2213      9.78  Q         .         .         .        V.
   9.750     40.2851      9.25  Q         .         .         .        V.
   9.833     40.3435      8.48  Q         .         .         .        V.
   9.917     40.3954      7.54  Q         .         .         .        V.
  10.000     40.4396      6.41  Q         .         .         .        V.
  10.083     40.4737      4.95  Q         .         .         .        V.
  10.167     40.4983      3.58  Q         .         .         .        V.
  10.250     40.5218      3.41  Q         .         .         .        V.
  10.333     40.5448      3.34  Q         .         .         .        V.
  10.417     40.5675      3.29  Q         .         .         .        V.
  10.500     40.5897      3.23  Q         .         .         .        V.
  10.583     40.6117      3.20  Q         .         .         .        V.
  10.667     40.6335      3.17  Q         .         .         .        V.
  10.750     40.6551      3.13  Q         .         .         .        V.
  10.833     40.6764      3.10  Q         .         .         .        V.
  10.917     40.6976      3.07  Q         .         .         .        V.
  11.000     40.7185      3.04  Q         .         .         .        V.
  11.083     40.7393      3.01  Q         .         .         .        V.
  11.167     40.7598      2.98  Q         .         .         .        V.
  11.250     40.7800      2.94  Q         .         .         .        V.
  11.333     40.7999      2.90  Q         .         .         .        V.
```

```
   11.417     40.8196      2.86  Q         .         .         .        V.
   11.500     40.8390      2.82  Q         .         .         .        V.
   11.583     40.8581      2.77  Q         .         .         .        V.
   11.667     40.8769      2.73  Q         .         .         .        V.
   11.750     40.8954      2.68  Q         .         .         .        V.
   11.833     40.9136      2.64  Q         .         .         .        V.
   11.917     40.9314      2.59  Q         .         .         .        V.
   12.000     40.9489      2.54  Q         .         .         .        V.
   12.083     40.9660      2.49  Q         .         .         .        V.
   12.167     40.9828      2.43  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      100.0     200.0     300.0     400.0
 ----------------------------------------------------------------------------
   12.250     40.9988      2.32  Q         .         .         .        V.
   12.333     41.0134      2.11  Q         .         .         .        V.
   12.417     41.0259      1.82  Q         .         .         .        V.
   12.500     41.0359      1.46  Q         .         .         .        V.
   12.583     41.0429      1.02  Q         .         .         .        V.
   12.667     41.0459      0.43  Q         .         .         .        V.
   12.750     41.0464      0.07  Q         .         .         .        V.
   12.833     41.0467      0.04  Q         .         .         .        V.
   12.917     41.0469      0.03  Q         .         .         .        V.
   13.000     41.0470      0.02  Q         .         .         .        V.
   13.083     41.0470      0.01  Q         .         .         .        V.
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
               0%                             785.0
              10%                             210.0
              20%                              90.0
              30%                              60.0
              40%                              50.0
              50%                              40.0
              60%                              30.0
              70%                              25.0
              80%                              20.0
              90%                              15.0
 ============================================================================

   END OF FLOODSCx ROUTING ANALYSIS
```

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****************************************************************************

              F L O O D   R O U T I N G   A N A L Y S I S

ACCORDING TO RIVERSIDE COUNTY FLOOD CONTORL AND WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
         (c) Copyright 1989-2017 Advanced Engineering Software (aes)
                 (Synthetic Unit Hydrograph Version 21.1)
                 Release Date: 01/17/2017  License ID 1419

                           Analysis prepared by:





 ************************** DESCRIPTION OF STUDY **************************
* 100 YR - 6 HR                                                            *
* US GYPSUM - PROPOSED WEST                                                *
* 9571 - 2/21/17 - JO                                                      *
 **************************************************************************

  FILE NAME: TOTALW.DAT
  TIME/DATE OF STUDY: 17:41 02/21/2017



****************************************************************************
  FLOW PROCESS FROM NODE      1.00 TO NODE      2.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
============================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   29227.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   14259.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =    1478.000 FEET
         BASIN FACTOR = 0.020
         WATERSHED AREA =    3881.000 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.464 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         MOUNTAIN S-GRAPH SELECTED
         UNIFORM MEAN SOIL-LOSS(INCH/HOUR) =  0.236
         LOW SOIL-LOSS RATE PERCENT(DECIMAL) = 0.900
         USER-ENTERED RAINFALL =  2.92 INCHES
         RCFC&WCD 6-Hour Storm (5-Minute period) SELECTED
         RCFC&WCD DEPTH-AREA ADJUSTMENT FACTOR(PLATE E-5.8) = 0.9891


         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.958



============================================================================
                      UNIT HYDROGRAPH DETERMINATION

----------------------------------------------------------------------------
    INTERVAL          "S" GRAPH          UNIT HYDROGRAPH
     NUMBER          MEAN VALUES          ORDINATES(CFS)
----------------------------------------------------------------------------
        1                2.015               945.769
        2                7.502              2575.395
        3               16.876              4399.666
        4               30.805              6537.602
        5               41.889              5202.379
        6               49.415              3532.752
        7               54.792              2523.725
        8               58.725              1845.581
        9               62.224              1642.708
       10               65.149              1372.467
       11               67.766              1228.707
       12               70.065              1078.935
       13               72.219              1010.701
       14               74.021               846.150
       15               75.666               772.082
       16               77.196               718.096
       17               78.594               655.874
       18               79.870               598.855
       19               81.082               569.094
       20               82.218               533.335
       21               83.197               459.371
       22               84.129               437.316
       23               84.936               378.919
       24               85.733               374.020
       25               86.470               345.842
       26               87.174               330.576
       27               87.874               328.589
       28               88.521               303.626
       29               89.151               295.866
       30               89.781               295.254
       31               90.364               273.711
       32               90.921               261.361
```

```
       33                91.478                261.461
       34                92.019                254.313
       35                92.492                221.849
       36                92.955                217.459
       37                93.419                217.459
       38                93.879                216.134
       39                94.265                181.216
       40                94.621                166.921
       41                94.977                166.925
       42                95.332                166.821
       43                95.688                167.025
       44                96.025                158.141
       45                96.290                124.451
       46                96.548                121.186
       47                96.807                121.390
       48                97.065                121.186
       49                97.324                121.390
       50                97.582                121.286
       51                97.840                121.082
       52                98.026                 87.188
       53                98.097                 33.489
       54                98.168                 33.281
       55                98.238                 33.077
       56                98.309                 33.081
       57                98.379                 33.077
       58                98.450                 33.077
       59                98.521                 33.285
       60                98.591                 32.873
       61                98.662                 33.281
       62                98.732                 32.876
       63                98.803                 33.281
       64                98.873                 33.081
       65                98.944                 33.077
       66                99.014                 33.077
       67                99.085                 33.077
       68                99.155                 33.077
       69                99.226                 33.077
       70                99.296                 33.077
       71                99.366                 33.077
       72                99.437                 33.077
       73                99.507                 33.077
       74                99.578                 33.077
       75                99.648                 33.077
       76                99.719                 33.077
       77                99.789                 33.077
       78                99.860                 33.077
       79                99.930                 33.077
       80               100.000                 32.726


****************************************************************************
         UNIT              UNIT            UNIT               EFFECTIVE
        PERIOD           RAINFALL        SOIL-LOSS             RAINFALL
       (NUMBER)          (INCHES)         (INCHES)             (INCHES)
----------------------------------------------------------------------------
           1              0.0144           0.0130               0.0014
           2              0.0173           0.0156               0.0017
           3              0.0173           0.0156               0.0017
           4              0.0173           0.0156               0.0017
           5              0.0173           0.0156               0.0017
           6              0.0202           0.0182               0.0020
           7              0.0202           0.0182               0.0020
           8              0.0202           0.0182               0.0020
           9              0.0202           0.0182               0.0020
          10              0.0202           0.0182               0.0020
          11              0.0202           0.0182               0.0020
          12              0.0231           0.0196               0.0035
          13              0.0231           0.0196               0.0035
          14              0.0231           0.0196               0.0035
          15              0.0231           0.0196               0.0035
          16              0.0231           0.0196               0.0035
          17              0.0231           0.0196               0.0035
          18              0.0231           0.0196               0.0035
          19              0.0231           0.0196               0.0035
          20              0.0231           0.0196               0.0035
          21              0.0231           0.0196               0.0035
          22              0.0231           0.0196               0.0035
          23              0.0231           0.0196               0.0035
          24              0.0260           0.0196               0.0064
          25              0.0231           0.0196               0.0035
          26              0.0260           0.0196               0.0064
          27              0.0260           0.0196               0.0064
          28              0.0260           0.0196               0.0064
          29              0.0260           0.0196               0.0064
          30              0.0260           0.0196               0.0064
          31              0.0260           0.0196               0.0064
          32              0.0260           0.0196               0.0064
          33              0.0289           0.0196               0.0092
          34              0.0289           0.0196               0.0092
          35              0.0289           0.0196               0.0092
          36              0.0289           0.0196               0.0092
          37              0.0289           0.0196               0.0092
          38              0.0318           0.0196               0.0121
          39              0.0318           0.0196               0.0121
          40              0.0318           0.0196               0.0121
          41              0.0347           0.0196               0.0150
          42              0.0375           0.0196               0.0179
          43              0.0404           0.0196               0.0208
```

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          44             0.0404           0.0196              0.0208
          45             0.0433           0.0196              0.0237
          46             0.0433           0.0196              0.0237
          47             0.0462           0.0196              0.0266
          48             0.0462           0.0196              0.0266
          49             0.0491           0.0196              0.0295
          50             0.0520           0.0196              0.0324
          51             0.0549           0.0196              0.0352
          52             0.0578           0.0196              0.0381
          53             0.0607           0.0196              0.0410
          54             0.0607           0.0196              0.0410
          55             0.0635           0.0196              0.0439
          56             0.0664           0.0196              0.0468
          57             0.0693           0.0196              0.0497
          58             0.0693           0.0196              0.0497
          59             0.0722           0.0196              0.0526
          60             0.0751           0.0196              0.0555
          61             0.0895           0.0196              0.0699
          62             0.1040           0.0196              0.0843
          63             0.1126           0.0196              0.0930
          64             0.1213           0.0196              0.1017
          65             0.1357           0.0196              0.1161
          66             0.1617           0.0196              0.1421
          67             0.0549           0.0196              0.0352
          68             0.0260           0.0196              0.0064
          69             0.0173           0.0156              0.0017
          70             0.0144           0.0130              0.0014
          71             0.0087           0.0078              0.0009
          72             0.0058           0.0052              0.0006

         TOTAL STORM RAINFALL(INCHES) =  2.89
         TOTAL SOIL-LOSS(INCHES) =  1.35
         TOTAL EFFECTIVE RAINFALL(INCHES) =  1.54

----------------------------------------------------------------------------
    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =     435.0731
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     498.7373
----------------------------------------------------------------------------

============================================================================

                          6 - H O U R   S T O R M
                    R U N O F F   H Y D R O G R A P H

============================================================================
               HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
        (Note: Time indicated is at END of Each Unit Intervals)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      825.0    1650.0    2475.0    3300.0
----------------------------------------------------------------------------
   0.083      0.0094      1.37  Q         .         .         .         .
   0.167      0.0463      5.36  Q         .         .         .         .
   0.250      0.1321     12.46  Q         .         .         .         .
   0.333      0.2916     23.17  Q         .         .         .         .
   0.417      0.5159     32.57  Q         .         .         .         .
   0.500      0.7876     39.44  Q         .         .         .         .
   0.583      1.0965     44.85  Q         .         .         .         .
   0.667      1.4375     49.52  Q         .         .         .         .
   0.750      1.8116     54.31  Q         .         .         .         .
   0.833      2.2129     58.27  Q         .         .         .         .
   0.917      2.6362     61.46  Q         .         .         .         .
   1.000      3.0871     65.47  Q         .         .         .         .
   1.083      3.5796     71.51  Q         .         .         .         .
   1.167      4.1297     79.88  Q         .         .         .         .
   1.250      4.7572     91.12  VQ        .         .         .         .
   1.333      5.4478    100.27  VQ        .         .         .         .
   1.417      6.1838    106.86  VQ        .         .         .         .
   1.500      6.9542    111.87  VQ        .         .         .         .
   1.583      7.7516    115.78  VQ        .         .         .         .
   1.667      8.5734    119.32  VQ        .         .         .         .
   1.750      9.4160    122.34  VQ        .         .         .         .
   1.833     10.2773    125.07  VQ        .         .         .         .
   1.917     11.1553    127.48  VQ        .         .         .         .
   2.000     12.0678    132.49  VQ        .         .         .         .
   2.083     13.0264    139.19  .Q        .         .         .         .
   2.167     14.0527    149.02  .Q        .         .         .         .
   2.250     15.1848    164.37  .Q        .         .         .         .
   2.333     16.3887    174.81  .VQ       .         .         .         .
   2.417     17.6998    190.36  .VQ       .         .         .         .
   2.500     19.1041    203.91  .VQ       .         .         .         .
   2.583     20.5745    213.51  .VQ       .         .         .         .
   2.667     22.0995    221.43  .VQ       .         .         .         .
   2.750     23.6827    229.88  .VQ       .         .         .         .
   2.833     25.3544    242.73  . Q       .         .         .         .
   2.917     27.1449    259.99  . VQ      .         .         .         .
   3.000     29.0952    283.18  . VQ      .         .         .         .
   3.083     31.1735    301.78  . VQ      .         .         .         .
   3.167     33.3660    318.34  . VQ      .         .         .         .
   3.250     35.6814    336.20  . V Q     .         .         .         .
   3.333     38.1405    357.07  .  VQ     .         .         .         .
   3.417     40.7997    386.12  .  VQ     .         .         .         .
   3.500     43.6774    417.83  .  V Q    .         .         .         .
   3.583     46.8235    456.82  .  V Q    .         .         .         .
   3.667     50.3247    508.39  .   V Q   .         .         .         .
   3.750     54.2373    568.10  .   V Q   .         .         .         .
   3.833     58.5663    628.57  .   V  Q  .         .         .         .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      825.0    1650.0    2475.0    3300.0
```

```
----------------------------------------------------------------------------
   3.917     63.2808    684.55  .    V  Q .         .         .         .
   4.000     68.3834    740.90  .    V  Q .         .         .         .
   4.083     73.8609    795.34  .    V   Q.         .         .         .
   4.167     79.7478    854.78  .     V   Q         .         .         .
   4.250     86.0680    917.69  .     V   .Q        .         .         .
   4.333     92.8913    990.74  .      V  . Q       .         .         .
   4.417    100.2864   1073.77  .       V .  Q      .         .         .
   4.500    108.2759   1160.08  .       V .   Q     .         .         .
   4.583    116.8624   1246.76  .        V.    Q    .         .         .
   4.667    126.0310   1331.28  .         V     Q   .         .         .
   4.750    135.7620   1412.94  .         V      Q  .         .         .
   4.833    146.0784   1497.94  .         .V      Q .         .         .
   4.917    156.9996   1585.76  .         . V      Q.         .         .
   5.000    168.5218   1673.02  .         .  V      Q         .         .
   5.083    180.7055   1769.07  .         .   V     .Q        .         .
   5.167    193.7970   1900.88  .         .    V    .  Q      .         .
   5.250    208.1569   2085.07  .         .     V   .    Q    .         .
   5.333    224.2355   2334.62  .         .      V  .       Q .         .
   5.417    242.3342   2627.92  .         .        V.         .Q        .
   5.500    262.6665   2952.25  .         .         .V        .    Q    .
   5.583    284.7564   3207.45  .         .         . V       .       Q .
   5.667    307.3844   3285.59  .         .         .   V     .        Q.
   5.750    328.8344   3114.55  .         .         .     V   .      Q  .
   5.833    346.5459   2571.71  .         .         .      V  .Q        .
   5.917    360.5035   2026.64  .         .         .   Q   V .         .
   6.000    371.8016   1640.48  .         .        Q.        V.         .
   6.083    381.3385   1384.76  .         .     Q   .         V         .
   6.167    389.7390   1219.76  .         .   Q     .         .V        .
   6.250    397.2079   1084.48  .         .  Q      .         .V        .
   6.333    403.9326    976.42  .         .Q        .         . V       .
   6.417    410.0256    884.71  .         Q         .         . V       .
   6.500    415.5925    808.31  .        Q.         .         .  V      .
   6.583    420.6656    736.62  .       Q .         .         .  V      .
   6.667    425.3512    680.34  .       Q .         .         .   V     .
   6.750    429.7034    631.94  .      Q  .         .         .   V     .
   6.833    433.7498    587.53  .      Q  .         .         .   V     .
   6.917    437.5193    547.34  .     Q   .         .         .    V    .
   7.000    441.0450    511.93  .     Q   .         .         .    V    .
   7.083    444.3367    477.95  .    Q    .         .         .    V    .
   7.167    447.4027    445.19  .    Q    .         .         .    V    .
   7.250    450.2894    419.14  .    Q    .         .         .     V   .
   7.333    453.0113    395.22  .   Q     .         .         .     V   .
   7.417    455.6071    376.92  .   Q     .         .         .     V   .
   7.500    458.0806    359.14  .   Q     .         .         .     V   .
   7.583    460.4460    343.46  .   Q     .         .         .     V   .
   7.667    462.7124    329.08  .  Q      .         .         .      V  .
   7.750    464.8739    313.84  .  Q      .         .         .      V  .
   7.833    466.9413    300.20  .  Q      .         .         .      V  .
   7.917    468.9160    286.72  .  Q      .         .         .      V  .
   8.000    470.7897    272.06  .  Q      .         .         .      V  .

----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.      825.0    1650.0    2475.0    3300.0
----------------------------------------------------------------------------
   8.083    472.5714    258.69  .  Q      .         .         .      V  .
   8.167    474.2696    246.58  . Q       .         .         .       V .
   8.250    475.8770    233.39  . Q       .         .         .       V .
   8.333    477.3865    219.18  . Q       .         .         .       V .
   8.417    478.8168    207.68  . Q       .         .         .       V .
   8.500    480.1728    196.89  . Q       .         .         .       V .
   8.583    481.4494    185.36  . Q       .         .         .       V .
   8.667    482.6361    172.31  . Q       .         .         .       V .
   8.750    483.7518    162.00  .Q        .         .         .       V .
   8.833    484.8085    153.44  .Q        .         .         .       V .
   8.917    485.8058    144.81  .Q        .         .         .       V .
   9.000    486.7395    135.57  .Q        .         .         .        V.
   9.083    487.6034    125.44  .Q        .         .         .        V.
   9.167    488.3971    115.25  .Q        .         .         .        V.
   9.250    489.1451    108.60  .Q        .         .         .        V.
   9.333    489.8522    102.67  .Q        .         .         .        V.
   9.417    490.5107     95.62  .Q        .         .         .        V.
   9.500    491.1135     87.53  .Q        .         .         .        V.
   9.583    491.6554     78.68  Q         .         .         .        V.
   9.667    492.1299     68.89  Q         .         .         .        V.
   9.750    492.5258     57.49  Q         .         .         .        V.
   9.833    492.8578     48.21  Q         .         .         .        V.
   9.917    493.1722     45.65  Q         .         .         .        V.
  10.000    493.4809     44.81  Q         .         .         .        V.
  10.083    493.7850     44.17  Q         .         .         .        V.
  10.167    494.0844     43.47  Q         .         .         .        V.
  10.250    494.3785     42.71  Q         .         .         .        V.
  10.333    494.6678     42.00  Q         .         .         .        V.
  10.417    494.9515     41.19  Q         .         .         .        V.
  10.500    495.2299     40.43  Q         .         .         .        V.
  10.583    495.5021     39.53  Q         .         .         .        V.
  10.667    495.7684     38.67  Q         .         .         .        V.
  10.750    496.0279     37.68  Q         .         .         .        V.
  10.833    496.2800     36.60  Q         .         .         .        V.
  10.917    496.5240     35.43  Q         .         .         .        V.
  11.000    496.7593     34.17  Q         .         .         .        V.
  11.083    496.9853     32.81  Q         .         .         .        V.
  11.167    497.2020     31.46  Q         .         .         .        V.
  11.250    497.4086     30.00  Q         .         .         .        V.
  11.333    497.6046     28.45  Q         .         .         .        V.
  11.417    497.7892     26.81  Q         .         .         .        V.
  11.500    497.9625     25.17  Q         .         .         .        V.
  11.583    498.1238     23.43  Q         .         .         .        V.
  11.667    498.2725     21.59  Q         .         .         .        V.
```

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  11.750    498.4052     19.27  Q         .         .         .        V.
  11.833    498.5187     16.48  Q         .         .         .        V.
  11.917    498.6109     13.40  Q         .         .         .        V.
  12.000    498.6800     10.03  Q         .         .         .        V.
  12.083    498.7226      6.18  Q         .         .         .        V.
  12.167    498.7330      1.52  Q         .         .         .        V.

 ----------------------------------------------------------------------------
  TIME(HRS) VOLUME(AF)   Q(CFS) 0.      825.0    1650.0    2475.0    3300.0
 ----------------------------------------------------------------------------
  12.250    498.7355      0.36  Q         .         .         .        V.
  12.333    498.7365      0.15  Q         .         .         .        V.
  12.417    498.7372      0.10  Q         .         .         .        V.
  12.500    498.7375      0.05  Q         .         .         .         V
  12.583    498.7376      0.02  Q         .         .         .         V
--------------------------------------------------------------------------------
    TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
    (Note: 100% of Peak Flow Rate estimate assumed to have
    an instantaneous time duration)

    Percentile of Estimated                 Duration
        Peak Flow Rate                      (minutes)
    =======================                 =========
              0%                              755.0
             10%                              270.0
             20%                              170.0
             30%                              120.0
             40%                               90.0
             50%                               60.0
             60%                               45.0
             70%                               35.0
             80%                               20.0
             90%                               15.0
 ============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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APPENDIX D

HEC-RAS Hydraulics Results

E-Prop 2-year Results

HEC-RAS Plan: Plan 04   River: Eastern   Reach: Alignment - E   Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - E	24000	PF 1	350.00	550.00	552.09	550.99	552.20	0.001143	2.64	132.71	64.05	0.32
Alignment - E	23500	PF 1	350.00	550.00	550.50	550.50	550.75	0.016582	4.01	87.31	174.45	1.00
Alignment - E	23000	PF 1	350.00	525.00	525.25	525.66	527.61	0.403202	12.34	28.36	114.98	4.38
Alignment - E	22500	PF 1	350.00	475.00	503.66	475.78	503.66	0.000000	0.13	3053.12	217.97	0.00
Alignment - E	22000	PF 1	350.00	500.00	503.66		503.66	0.000015	0.44	791.20	216.93	0.04
Alignment - E	21500	PF 1	350.00	500.00	502.35	502.35	503.52	0.013177	8.65	40.46	17.58	1.01
Alignment - E	21000	PF 1	350.00	450.00	451.22	450.35	451.23	0.000299	0.97	359.98	295.79	0.16
Alignment - E	20500	PF 1	350.00	450.00	451.09		451.10	0.000230	0.79	441.75	405.51	0.13
Alignment - E	20000	PF 1	350.00	450.00	451.00		451.00	0.000160	0.62	560.65	562.71	0.11
Alignment - E	19500	PF 1	350.00	450.00	450.93		450.93	0.000119	0.51	680.48	732.48	0.09
Alignment - E	19000	PF 1	350.00	450.00	450.47	450.47	450.71	0.017012	3.91	89.61	190.05	1.00
Alignment - E	18500	PF 1	350.00	400.00	400.59	400.59	400.89	0.015972	4.38	79.93	135.64	1.01
Alignment - E	18000	PF 1	350.00	375.00	377.10	375.43	377.11	0.000089	0.76	462.31	220.90	0.09
Alignment - E	17500	PF 1	350.00	375.00	376.98		377.02	0.000412	1.55	225.35	114.07	0.19
Alignment - E	17000	PF 1	350.00	375.00	376.66		376.73	0.000879	2.02	173.12	104.36	0.28
Alignment - E	16500	PF 1	350.00	375.00	375.35	375.35	375.53	0.018551	3.36	104.28	296.58	1.00
Alignment - E	16000	PF 1	350.00	350.00	351.43	350.49	351.46	0.000482	1.36	256.51	180.02	0.20
Alignment - E	15500	PF 1	350.00	350.00	350.48	350.48	350.72	0.016885	3.93	88.96	185.29	1.00
Alignment - E	15000	PF 1	350.00	325.00	327.56	325.56	327.58	0.000105	0.93	376.13	147.07	0.10
Alignment - E	14500	PF 1	350.00	325.00	327.31		327.44	0.001270	2.92	119.85	52.28	0.34
Alignment - E	14000	PF 1	350.00	325.00	325.58	325.58	325.88	0.015821	4.33	80.76	138.19	1.00
Alignment - E	13500	PF 1	350.00	275.00	275.10	275.75	294.64	10.434060	35.46	9.87	94.42	19.34
Alignment - E	13000	PF 1	350.00	250.00	252.62	250.36	252.63	0.000025	0.47	752.13	287.24	0.05
Alignment - E	12500	PF 1	350.00	250.00	252.52		252.59	0.000572	2.09	167.13	66.81	0.23
Alignment - E	12000	PF 1	350.00	250.00	251.78		252.01	0.003058	3.86	90.74	51.29	0.51
Alignment - E	11500	PF 1	350.00	250.00	251.46		251.49	0.000440	1.32	264.35	181.38	0.19
Alignment - E	11000	PF 1	350.00	250.00	251.17		251.20	0.000751	1.50	234.10	200.53	0.24
Alignment - E	10500	PF 1	350.00	150.00	251.19		251.19	0.000000	0.01	57021.29	808.05	0.00
Alignment - E	10000	PF 1	350.00	171.30	251.19		251.19	0.000000	0.01	24255.13	647.82	0.00
Alignment - E	9500	PF 1	350.00	204.72	251.19		251.19	0.000000	0.03	11916.72	579.24	0.00
Alignment - E	9000	PF 1	350.00	250.00	251.18		251.19	0.000188	0.76	462.40	391.02	0.12
Alignment - E	8500	PF 1	350.00	250.00	250.57	250.57	250.86	0.015949	4.28	81.70	143.19	1.00
Alignment - E	8000	PF 1	350.00	225.00	226.83	225.57	226.85	0.000334	1.33	263.12	144.34	0.17
Alignment - E	7500	PF 1	350.00	225.00	225.87	225.87	226.31	0.014233	5.32	65.80	75.50	1.00
Alignment - E	7000	PF 1	350.00	175.00	175.62	175.62	175.93	0.015629	4.47	78.24	126.31	1.00
Alignment - E	6500	PF 1	350.00	150.00	152.10	150.77	152.15	0.000530	1.82	192.67	92.04	0.22
Alignment - E	6000	PF 1	350.00	150.00	151.86		151.90	0.000459	1.57	222.23	119.59	0.20
Alignment - E	5500	PF 1	350.00	122.57	151.89		151.89	0.000000	0.10	3472.37	228.08	0.00
Alignment - E	5000	PF 1	350.00	100.00	151.89		151.89	0.000000	0.03	12817.89	381.82	0.00
Alignment - E	4500	PF 1	350.00	150.00	151.82		151.88	0.000747	1.97	177.37	97.58	0.26
Alignment - E	3999.99	PF 1	350.00	150.00	151.51		151.54	0.000592	1.56	223.94	148.88	0.22
Alignment - E	3500	PF 1	350.00	150.00	151.33		151.34	0.000279	0.99	352.63	266.19	0.15
Alignment - E	3000	PF 1	350.00	150.00	150.59	150.59	150.88	0.015986	4.37	80.14	136.56	1.01
Alignment - E	2500	PF 1	350.00	75.00	76.50	76.50	77.25	0.012785	6.96	50.28	33.73	1.01
Alignment - E	2000	PF 1	350.00	50.00	50.19	50.72	55.59	1.326869	18.64	18.78	100.20	7.59
Alignment - E	1500	PF 1	350.00	50.00	50.73	50.73	51.09	0.014862	4.84	72.35	99.55	1.00

E-Prop 5-year Results

HEC-RAS Plan: Plan 05 River: Eastern Reach: Alignment - E Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - E	24000	PF 1	650.00	550.00	552.75	551.48	552.97	0.001607	3.71	175.12	64.45	0.40
Alignment - E	23500	PF 1	650.00	550.00	550.75	550.75	551.13	0.014716	4.95	131.36	174.59	1.01
Alignment - E	23000	PF 1	650.00	525.00	525.34	525.99	529.55	0.462542	16.46	39.49	115.01	4.95
Alignment - E	22500	PF 1	650.00	475.00	505.47	476.18	505.47	0.000000	0.21	3448.32	218.57	0.01
Alignment - E	22000	PF 1	650.00	500.00	505.47		505.47	0.000014	0.55	1184.18	217.54	0.04
Alignment - E	21500	PF 1	650.00	500.00	503.54	503.54	505.27	0.012901	10.55	61.60	17.98	1.01
Alignment - E	21000	PF 1	650.00	450.00	451.65	450.53	451.68	0.000377	1.33	487.63	295.98	0.18
Alignment - E	20500	PF 1	650.00	450.00	451.50		451.51	0.000276	1.07	606.45	405.68	0.15
Alignment - E	20000	PF 1	650.00	450.00	451.39		451.40	0.000183	0.83	781.44	562.89	0.12
Alignment - E	19500	PF 1	650.00	450.00	451.32		451.32	0.000129	0.67	963.18	732.71	0.10
Alignment - E	19000	PF 1	650.00	450.00	450.71	450.71	451.07	0.014949	4.81	135.22	190.33	1.01
Alignment - E	18500	PF 1	650.00	400.00	400.89	400.89	401.34	0.013851	5.36	121.17	135.74	1.00
Alignment - E	18000	PF 1	650.00	375.00	377.81	375.64	377.83	0.000116	1.05	621.03	221.17	0.11
Alignment - E	17500	PF 1	650.00	375.00	377.64		377.72	0.000550	2.16	301.03	114.32	0.23
Alignment - E	17000	PF 1	650.00	375.00	377.19		377.32	0.001219	2.85	228.41	104.56	0.34
Alignment - E	16500	PF 1	650.00	375.00	375.53	375.53	375.80	0.016448	4.14	156.82	296.65	1.01
Alignment - E	16000	PF 1	650.00	350.00	351.92	350.74	351.98	0.000619	1.88	345.66	180.17	0.24
Alignment - E	15500	PF 1	650.00	350.00	350.72	350.72	351.09	0.014851	4.84	134.17	185.37	1.00
Alignment - E	15000	PF 1	650.00	325.00	328.46	325.85	328.49	0.000135	1.28	508.07	147.31	0.12
Alignment - E	14500	PF 1	650.00	325.00	328.03		328.30	0.001810	4.12	157.85	52.47	0.42
Alignment - E	14000	PF 1	650.00	325.00	325.88	325.88	326.32	0.013939	5.34	121.83	138.27	1.00
Alignment - E	13500	PF 1	650.00	275.00	276.13	276.13	276.70	0.013043	6.06	107.24	94.75	1.00
Alignment - E	13000	PF 1	650.00	250.00	253.60	250.54	253.60	0.000030	0.63	1032.70	287.56	0.06
Alignment - E	12500	PF 1	650.00	250.00	253.42		253.55	0.000726	2.85	227.91	67.10	0.27
Alignment - E	12000	PF 1	650.00	250.00	252.29		252.77	0.004630	5.55	117.05	51.46	0.65
Alignment - E	11500	PF 1	650.00	250.00	251.98		252.03	0.000550	1.81	359.41	181.56	0.23
Alignment - E	11000	PF 1	650.00	250.00	251.63		251.69	0.000858	1.99	326.69	200.70	0.27
Alignment - E	10500	PF 1	650.00	150.00	251.67		251.67	0.000000	0.01	57409.42	808.21	0.00
Alignment - E	10000	PF 1	650.00	171.30	251.67		251.67	0.000000	0.03	24566.29	647.98	0.00
Alignment - E	9500	PF 1	650.00	204.72	251.67		251.67	0.000000	0.05	12194.93	579.40	0.00
Alignment - E	9000	PF 1	650.00	250.00	251.66		251.67	0.000212	1.00	647.32	391.18	0.14
Alignment - E	8500	PF 1	650.00	250.00	250.86	250.86	251.29	0.014021	5.27	123.32	143.29	1.00
Alignment - E	8000	PF 1	650.00	225.00	227.55	225.86	227.60	0.000383	1.77	367.42	144.50	0.20
Alignment - E	7500	PF 1	650.00	225.00	226.32	226.32	226.98	0.012522	6.53	99.60	75.60	1.00
Alignment - E	7000	PF 1	650.00	175.00	175.94	175.94	176.41	0.013765	5.51	118.07	126.39	1.00
Alignment - E	6500	PF 1	650.00	150.00	152.82	151.16	152.92	0.000697	2.51	258.82	92.20	0.26
Alignment - E	6000	PF 1	650.00	150.00	152.52		152.59	0.000588	2.16	300.45	119.74	0.24
Alignment - E	5500	PF 1	650.00	122.57	152.57		152.57	0.000000	0.19	3626.82	228.24	0.01
Alignment - E	5000	PF 1	650.00	100.00	152.57		152.57	0.000000	0.05	13076.49	381.98	0.00
Alignment - E	4500	PF 1	650.00	150.00	152.44		152.55	0.000990	2.74	237.50	97.73	0.31
Alignment - E	3999.99	PF 1	650.00	150.00	152.04		152.11	0.000747	2.14	303.65	149.01	0.26
Alignment - E	3500	PF 1	650.00	150.00	151.83		151.86	0.000327	1.33	488.21	266.30	0.17
Alignment - E	3000	PF 1	650.00	150.00	150.89	150.89	151.33	0.014008	5.37	121.10	136.63	1.01
Alignment - E	2500	PF 1	650.00	75.00	77.27	77.27	78.40	0.011688	8.54	76.14	33.99	1.01
Alignment - E	2000	PF 1	650.00	50.00	50.28	51.09	58.41	1.150885	22.86	28.43	100.22	7.57
Alignment - E	1500	PF 1	650.00	50.00	51.10	51.10	51.65	0.013201	5.96	109.01	99.61	1.00

E-Prop 10-year Results

HEC-RAS Plan: Plan 06 River: Eastern Reach: Alignment - E Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - E	24000	PF 1	1011.00	550.00	553.33	551.99	553.68	0.002093	4.76	212.34	64.81	0.46
Alignment - E	23500	PF 1	1011.00	550.00	551.01	551.01	551.52	0.013390	5.73	176.35	174.72	1.01
Alignment - E	23000	PF 1	1011.00	525.00	525.45	526.33	531.42	0.461117	19.61	51.55	115.05	5.16
Alignment - E	22500	PF 1	1011.00	475.00	507.28	476.59	507.28	0.000001	0.30	3843.69	219.18	0.01
Alignment - E	22000	PF 1	1011.00	500.00	507.27		507.28	0.000013	0.64	1577.34	218.14	0.04
Alignment - E	21500	PF 1	1011.00	500.00	504.74	504.74	507.03	0.012969	12.14	83.31	18.39	1.01
Alignment - E	21000	PF 1	1011.00	450.00	452.06	450.71	452.10	0.000437	1.66	608.60	296.16	0.20
Alignment - E	20500	PF 1	1011.00	450.00	451.89		451.91	0.000309	1.32	764.99	405.85	0.17
Alignment - E	20000	PF 1	1011.00	450.00	451.77		451.79	0.000197	1.01	997.11	563.07	0.13
Alignment - E	19500	PF 1	1011.00	450.00	451.70		451.71	0.000134	0.81	1241.85	732.93	0.11
Alignment - E	19000	PF 1	1011.00	450.00	450.96	450.96	451.44	0.013424	5.55	182.26	190.62	1.00
Alignment - E	18500	PF 1	1011.00	400.00	401.20	401.20	401.80	0.012750	6.23	162.20	135.84	1.01
Alignment - E	18000	PF 1	1011.00	375.00	378.48	375.87	378.51	0.000139	1.32	768.53	221.42	0.12
Alignment - E	17500	PF 1	1011.00	375.00	378.25		378.37	0.000675	2.73	370.50	114.55	0.27
Alignment - E	17000	PF 1	1011.00	375.00	377.66		377.87	0.001561	3.64	277.42	104.74	0.39
Alignment - E	16500	PF 1	1011.00	375.00	375.71	375.71	376.07	0.014933	4.80	210.53	296.72	1.01
Alignment - E	16000	PF 1	1011.00	350.00	352.38	350.99	352.47	0.000736	2.36	428.67	180.32	0.27
Alignment - E	15500	PF 1	1011.00	350.00	350.97	350.97	351.46	0.013403	5.60	180.55	185.44	1.00
Alignment - E	15000	PF 1	1011.00	325.00	329.31	326.14	329.34	0.000160	1.60	632.64	147.54	0.14
Alignment - E	14500	PF 1	1011.00	325.00	328.67		329.10	0.002370	5.28	191.44	52.65	0.49
Alignment - E	14000	PF 1	1011.00	325.00	326.18	326.18	326.78	0.012698	6.18	163.60	138.35	1.00
Alignment - E	13500	PF 1	1011.00	275.00	276.52	276.52	277.29	0.011916	7.02	144.09	94.88	1.00
Alignment - E	13000	PF 1	1011.00	250.00	254.56	250.73	254.57	0.000033	0.77	1309.64	287.88	0.06
Alignment - E	12500	PF 1	1011.00	250.00	254.31		254.51	0.000834	3.51	287.69	67.38	0.30
Alignment - E	12000	PF 1	1011.00	250.00	252.69		253.53	0.006674	7.35	137.52	51.60	0.79
Alignment - E	11500	PF 1	1011.00	250.00	252.48		252.56	0.000637	2.25	449.13	181.72	0.25
Alignment - E	11000	PF 1	1011.00	250.00	252.08		252.17	0.000922	2.42	417.49	200.87	0.30
Alignment - E	10500	PF 1	1011.00	150.00	252.15		252.15	0.000000	0.02	57791.70	808.37	0.00
Alignment - E	10000	PF 1	1011.00	171.30	252.15		252.15	0.000000	0.04	24872.78	648.14	0.00
Alignment - E	9500	PF 1	1011.00	204.72	252.15		252.15	0.000000	0.08	12468.95	579.55	0.00
Alignment - E	9000	PF 1	1011.00	250.00	252.12		252.14	0.000225	1.22	829.15	391.34	0.15
Alignment - E	8500	PF 1	1011.00	250.00	251.16	251.16	251.74	0.012774	6.11	165.57	143.39	1.00
Alignment - E	8000	PF 1	1011.00	225.00	228.25	226.15	228.33	0.000415	2.15	469.49	144.66	0.21
Alignment - E	7500	PF 1	1011.00	225.00	226.77	226.77	227.66	0.011585	7.57	133.50	75.70	1.01
Alignment - E	7000	PF 1	1011.00	175.00	176.25	176.25	176.89	0.012588	6.38	158.40	126.47	1.01
Alignment - E	6500	PF 1	1011.00	150.00	150.51	151.55	157.68	0.463170	21.47	47.08	91.67	5.28
Alignment - E	6000	PF 1	1011.00	150.00	153.13	151.30	153.24	0.000694	2.70	374.05	119.88	0.27
Alignment - E	5500	PF 1	1011.00	122.57	153.21		153.21	0.000001	0.28	3773.39	228.39	0.01
Alignment - E	5000	PF 1	1011.00	100.00	153.21		153.21	0.000000	0.08	13321.93	382.13	0.00
Alignment - E	4500	PF 1	1011.00	150.00	153.00		153.19	0.001208	3.45	292.93	97.86	0.35
Alignment - E	3999.99	PF 1	1011.00	150.00	152.55		152.66	0.000870	2.67	379.10	149.13	0.29
Alignment - E	3500	PF 1	1011.00	150.00	152.33		152.37	0.000359	1.63	620.07	266.42	0.19
Alignment - E	3000	PF 1	1011.00	150.00	151.19	151.19	151.79	0.012764	6.22	162.60	136.70	1.01
Alignment - E	2500	PF 1	1011.00	75.00	78.04	78.04	79.55	0.011088	9.86	102.49	34.26	1.01
Alignment - E	2000	PF 1	1011.00	50.00	50.39	51.46	60.63	0.942232	25.67	39.39	100.24	7.22
Alignment - E	1500	PF 1	1011.00	50.00	51.47	51.47	52.21	0.012084	6.91	146.34	99.67	1.01

W-Prop 2-year Results

HEC-RAS Plan: Plan 04   River: USG   Reach: CNTR-LINE   Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
CNTR-LINE	23000	PF 1	450.00	804.79	806.61	806.61	807.24	0.011974	6.39	70.44	54.80	0.99
CNTR-LINE	22500	PF 1	450.00	774.87	775.64	776.87	787.37	0.710600	27.47	16.38	30.63	6.62
CNTR-LINE	22000	PF 1	450.00	742.43	743.72	743.87	744.26	0.028669	5.86	76.85	131.67	1.35
CNTR-LINE	21500	PF 1	450.00	716.83	718.04	718.75	720.55	0.090827	12.70	35.43	45.00	2.52
CNTR-LINE	21000	PF 1	450.00	694.43	695.70	695.97	696.64	0.028554	7.77	57.88	64.53	1.45
CNTR-LINE	20500	PF 1	450.00	664.74	665.79	666.69	669.54	0.135502	15.54	28.96	36.66	3.08
CNTR-LINE	20000	PF 1	450.00	664.84	665.72	665.72	666.02	0.015356	4.40	103.53	176.17	1.00
CNTR-LINE	19500	PF 1	450.00	649.51	650.08	650.21	650.49	0.092632	5.12	87.82	443.11	2.03
CNTR-LINE	19000	PF 1	450.00	632.36	633.66	633.69	634.02	0.016695	4.83	93.15	141.98	1.05
CNTR-LINE	18500	PF 1	450.00	616.08	616.94	617.33	618.22	0.079637	9.09	49.51	94.39	2.21
CNTR-LINE	18000	PF 1	450.00	600.64	602.26	602.26	602.44	0.018489	3.45	130.52	354.72	1.00
CNTR-LINE	17500	PF 1	450.00	586.11	587.43	587.62	588.02	0.050653	6.19	72.78	250.82	2.03
CNTR-LINE	17000	PF 1	450.00	570.00	571.90	572.35	572.75	0.020348	7.39	60.93	55.71	1.25
CNTR-LINE	16500	PF 1	450.00	556.99	557.97	558.06	558.26	0.043321	4.31	104.34	423.94	1.53
CNTR-LINE	16000	PF 1	450.00	543.14	543.90	543.94	544.23	0.019641	4.61	97.67	180.61	1.10
CNTR-LINE	15500	PF 1	450.00	528.54	529.75	529.98	530.32	0.042179	6.09	73.91	159.56	1.58
CNTR-LINE	15000	PF 1	450.00	513.05	514.11	514.23	514.60	0.024265	5.62	80.03	128.63	1.26
CNTR-LINE	14500	PF 1	450.00	496.81	497.72	497.97	498.51	0.044539	7.10	63.36	113.12	1.67
CNTR-LINE	14000	PF 1	450.00	489.95	492.66	490.52	492.66	0.000062	0.67	676.24	304.44	0.08
CNTR-LINE	13500	PF 1	450.00	490.19	492.11	492.11	492.52	0.010434	5.10	88.15	107.73	0.99
CNTR-LINE	13000	PF 1	450.00	484.91	485.40	485.41	485.62	0.018730	3.78	118.89	285.05	1.03
CNTR-LINE	12500	PF 1	450.00	474.63	475.24	475.28	475.52	0.021833	4.21	106.92	245.14	1.12
CNTR-LINE	12000	PF 1	450.00	465.00	465.90	465.90	466.21	0.016088	4.48	100.46	166.84	1.02
CNTR-LINE	11500	PF 1	450.00	456.73	457.91	457.91	458.09	0.017435	3.47	129.79	344.33	1.00
CNTR-LINE	11000	PF 1	450.00	445.84	446.71	446.82	447.14	0.028222	5.26	85.50	169.96	1.31
CNTR-LINE	10500	PF 1	450.00	434.96	435.87	435.77	436.10	0.010193	3.89	115.71	168.68	0.83
CNTR-LINE	10000	PF 1	450.00	428.54	429.21	429.21	429.39	0.018332	3.37	133.39	373.87	1.00
CNTR-LINE	9500	PF 1	450.00	419.11	419.81	419.75	419.97	0.012978	3.20	140.77	330.08	0.86
CNTR-LINE	9000	PF 1	450.00	411.04	412.46	412.46	412.72	0.016254	4.09	110.14	211.47	1.00
CNTR-LINE	8500	PF 1	450.00	403.91	405.59	405.33	405.78	0.005372	3.57	126.12	127.61	0.63
CNTR-LINE	8000	PF 1	450.00	399.51	401.32	401.32	401.67	0.014120	4.76	94.52	133.75	1.00
CNTR-LINE	7500	PF 1	450.00	386.24	386.68	386.91	387.45	0.083390	7.06	63.77	184.03	2.11
CNTR-LINE	7000	PF 1	450.00	376.18	377.72	377.72	378.16	0.013890	5.36	84.03	95.10	1.00
CNTR-LINE	6500	PF 1	450.00	367.88	368.67	368.79	369.22	0.023819	5.96	75.50	109.15	1.26
CNTR-LINE	6000	PF 1	450.00	354.66	355.32	355.37	355.56	0.031196	3.91	114.95	384.02	1.26
CNTR-LINE	5500	PF 1	450.00	343.69	344.38	344.38	344.56	0.018288	3.43	131.13	357.32	1.00
CNTR-LINE	5000	PF 1	450.00	333.43	334.20	334.23	334.41	0.022636	3.66	123.09	358.19	1.10
CNTR-LINE	4500	PF 1	450.00	323.63	324.10	324.10	324.22	0.020808	2.80	160.62	654.14	1.00
CNTR-LINE	4000	PF 1	450.00	312.61	313.42	313.47	313.66	0.021386	3.91	115.03	289.83	1.09
CNTR-LINE	3500	PF 1	450.00	303.03	303.83	303.83	304.05	0.017351	3.81	118.20	265.17	1.01
CNTR-LINE	3000	PF 1	450.00	293.67	294.25	294.27	294.43	0.021411	3.39	132.92	416.32	1.06
CNTR-LINE	2500	PF 1	450.00	284.11	284.81	284.78	284.91	0.014972	2.49	180.95	688.35	0.86
CNTR-LINE	2000	PF 1	450.00	275.65	276.09	276.09	276.21	0.020449	2.82	159.54	634.82	0.99
CNTR-LINE	1500	PF 1	450.00	265.90	266.51	266.49	266.67	0.017457	3.27	137.57	389.27	0.97
CNTR-LINE	1000	PF 1	450.00	257.14	257.79	257.79	258.03	0.017115	3.88	116.11	251.00	1.00

W-Prop 5-year Results

HEC-RAS Plan: Plan 05   River: USG   Reach: CNTR-LINE   Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
CNTR-LINE	23000	PF 1	900.00	804.79	807.42	807.42	808.28	0.011072	7.45	120.77	70.27	1.00
CNTR-LINE	22500	PF 1	900.00	774.87	776.03	777.63	790.07	0.529265	30.05	29.95	39.22	6.06
CNTR-LINE	22000	PF 1	900.00	742.43	744.03	744.28	744.89	0.031997	7.43	121.17	157.79	1.49
CNTR-LINE	21500	PF 1	900.00	716.83	718.60	719.49	721.62	0.072134	13.94	64.55	59.97	2.37
CNTR-LINE	21000	PF 1	900.00	694.43	696.24	696.64	697.57	0.033126	9.27	97.07	92.83	1.60
CNTR-LINE	20500	PF 1	900.00	664.74	666.37	667.58	671.00	0.095535	17.27	52.12	43.25	2.77
CNTR-LINE	20000	PF 1	900.00	664.84	666.08	666.08	666.52	0.013631	5.40	168.03	188.19	1.00
CNTR-LINE	19500	PF 1	900.00	649.51	650.16	650.38	650.95	0.129162	7.11	126.63	501.95	2.49
CNTR-LINE	19000	PF 1	900.00	632.36	634.10	634.12	634.55	0.014536	5.38	167.33	195.69	1.03
CNTR-LINE	18500	PF 1	900.00	616.08	617.20	617.82	619.39	0.094191	11.88	75.78	109.69	2.52
CNTR-LINE	18000	PF 1	900.00	600.64	602.49	602.49	602.73	0.016394	3.92	229.69	469.27	0.99
CNTR-LINE	17500	PF 1	900.00	586.11	587.61	587.85	588.35	0.062220	6.92	130.14	403.60	2.15
CNTR-LINE	17000	PF 1	900.00	570.00	572.42	572.65	573.10	0.018017	6.61	136.16	311.23	1.76
CNTR-LINE	16500	PF 1	900.00	556.99	558.10	558.23	558.53	0.054220	5.25	171.30	595.30	1.73
CNTR-LINE	16000	PF 1	900.00	543.14	544.25	544.30	544.70	0.016717	5.40	166.76	215.51	1.08
CNTR-LINE	15500	PF 1	900.00	528.54	530.02	530.24	530.72	0.055671	6.71	134.04	307.73	1.79
CNTR-LINE	15000	PF 1	900.00	513.05	514.53	514.67	515.18	0.019767	6.47	139.04	155.12	1.21
CNTR-LINE	14500	PF 1	900.00	496.81	497.98	498.43	499.41	0.057305	9.60	93.76	128.68	1.98
CNTR-LINE	14000	PF 1	900.00	489.95	493.40	490.82	493.42	0.000104	0.99	913.08	333.81	0.11
CNTR-LINE	13500	PF 1	900.00	490.19	492.62	492.62	493.19	0.010579	6.04	148.97	131.68	1.00
CNTR-LINE	13000	PF 1	900.00	484.91	485.61	485.67	485.99	0.020343	4.98	180.76	305.52	1.14
CNTR-LINE	12500	PF 1	900.00	474.63	475.50	475.57	475.92	0.019945	5.21	173.29	281.66	1.15
CNTR-LINE	12000	PF 1	900.00	465.00	466.22	466.29	466.72	0.017038	5.63	159.73	196.28	1.10
CNTR-LINE	11500	PF 1	900.00	456.73	458.14	458.14	458.40	0.015964	4.08	220.76	427.09	1.00
CNTR-LINE	11000	PF 1	900.00	445.84	446.99	447.17	447.62	0.030417	6.40	140.53	220.11	1.41
CNTR-LINE	10500	PF 1	900.00	434.96	436.11	436.17	436.61	0.016582	5.68	158.38	188.31	1.09
CNTR-LINE	10000	PF 1	900.00	428.54	429.43	429.43	429.70	0.015931	4.12	218.47	408.37	0.99
CNTR-LINE	9500	PF 1	900.00	419.11	419.93	420.01	420.30	0.022472	4.86	185.26	366.28	1.20
CNTR-LINE	9000	PF 1	900.00	411.04	412.78	412.78	413.15	0.014746	4.87	184.65	252.92	1.01
CNTR-LINE	8500	PF 1	900.00	403.91	406.07	405.76	406.42	0.005811	4.80	187.57	128.49	0.70
CNTR-LINE	8000	PF 1	900.00	399.51	401.76	401.76	402.25	0.012850	5.65	159.37	159.13	0.99
CNTR-LINE	7500	PF 1	900.00	386.24	386.83	387.23	388.26	0.099402	9.57	94.06	196.08	2.44
CNTR-LINE	7000	PF 1	900.00	376.18	378.30	378.30	378.84	0.012870	5.93	151.73	139.16	1.00
CNTR-LINE	6500	PF 1	900.00	367.88	369.02	369.27	369.98	0.025648	7.87	114.40	114.92	1.39
CNTR-LINE	6000	PF 1	900.00	354.66	355.49	355.58	355.86	0.030411	4.93	182.58	423.46	1.32
CNTR-LINE	5500	PF 1	900.00	343.69	344.60	344.60	344.86	0.016563	4.15	217.19	413.90	1.01
CNTR-LINE	5000	PF 1	900.00	333.43	334.39	334.46	334.70	0.025500	4.46	201.82	476.72	1.21
CNTR-LINE	4500	PF 1	900.00	323.63	324.26	324.26	324.42	0.018193	3.28	274.48	798.23	0.99
CNTR-LINE	4000	PF 1	900.00	312.61	313.65	313.71	313.96	0.024237	4.51	199.38	445.14	1.19
CNTR-LINE	3500	PF 1	900.00	303.03	304.10	304.10	304.43	0.015397	4.60	195.54	301.73	1.01
CNTR-LINE	3000	PF 1	900.00	293.67	294.41	294.48	294.71	0.025283	4.36	206.32	500.49	1.20
CNTR-LINE	2500	PF 1	900.00	284.11	284.95	284.94	285.11	0.015874	3.16	285.25	793.43	0.93
CNTR-LINE	2000	PF 1	900.00	275.65	276.24	276.24	276.42	0.019107	3.41	264.02	751.50	1.01
CNTR-LINE	1500	PF 1	900.00	265.90	266.65	266.72	266.92	0.036651	4.16	216.23	743.55	1.36
CNTR-LINE	1000	PF 1	900.00	257.14	258.10	258.10	258.38	0.016162	4.23	212.69	386.07	1.01

W-Prop 10-year Results

HEC-RAS Plan: Plan 06 River: USG Reach: CNTR-LINE Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
CNTR-LINE	23000	PF 1	1300.00	804.79	808.35	808.35	808.84	0.013171	5.62	231.21	233.92	1.00
CNTR-LINE	22500	PF 1	1300.00	774.87	776.38	778.25	788.88	0.384416	28.37	45.82	51.47	5.30
CNTR-LINE	22000	PF 1	1300.00	742.43	744.23	744.58	745.32	0.033715	8.38	155.08	175.16	1.57
CNTR-LINE	21500	PF 1	1300.00	716.83	718.96	719.97	722.33	0.064896	14.72	88.30	69.84	2.31
CNTR-LINE	21000	PF 1	1300.00	694.43	696.50	697.02	698.23	0.035898	10.55	123.24	103.14	1.70
CNTR-LINE	20500	PF 1	1300.00	664.74	666.78	668.19	671.97	0.081289	18.27	71.14	48.00	2.65
CNTR-LINE	20000	PF 1	1300.00	664.84	666.33	666.33	666.89	0.012895	6.02	217.24	196.87	1.01
CNTR-LINE	19500	PF 1	1300.00	649.51	650.22	650.50	651.32	0.153610	8.44	154.00	537.01	2.78
CNTR-LINE	19000	PF 1	1300.00	632.36	634.37	634.39	634.89	0.013711	5.84	222.66	220.39	1.02
CNTR-LINE	18500	PF 1	1300.00	616.08	617.38	618.24	620.17	0.097622	13.38	97.13	120.71	2.63
CNTR-LINE	18000	PF 1	1300.00	600.64	602.63	602.64	602.93	0.016375	4.33	299.95	526.63	1.01
CNTR-LINE	17500	PF 1	1300.00	586.11	587.71	587.97	588.57	0.062095	7.44	174.94	449.57	2.10
CNTR-LINE	17000	PF 1	1300.00	570.00	572.62	572.77	573.12	0.018234	5.69	228.64	598.89	1.62
CNTR-LINE	16500	PF 1	1300.00	556.99	558.18	558.34	558.70	0.052267	5.80	224.22	637.38	1.72
CNTR-LINE	16000	PF 1	1300.00	543.14	544.47	544.55	545.03	0.016769	6.02	215.81	237.10	1.11
CNTR-LINE	15500	PF 1	1300.00	528.54	530.13	530.42	531.04	0.055372	7.65	170.04	319.99	1.85
CNTR-LINE	15000	PF 1	1300.00	513.05	514.78	514.96	515.60	0.019612	7.25	179.42	167.99	1.24
CNTR-LINE	14500	PF 1	1300.00	496.81	498.19	498.74	499.93	0.056899	10.61	122.57	144.07	2.03
CNTR-LINE	14000	PF 1	1300.00	489.95	493.91	491.04	493.93	0.000141	1.19	1089.45	376.60	0.12
CNTR-LINE	13500	PF 1	1300.00	490.19	492.98	492.98	493.64	0.010319	6.52	199.34	151.02	1.00
CNTR-LINE	13000	PF 1	1300.00	484.91	485.75	485.86	486.27	0.022366	5.79	224.36	324.29	1.23
CNTR-LINE	12500	PF 1	1300.00	474.63	475.69	475.79	476.20	0.018212	5.75	229.62	316.63	1.13
CNTR-LINE	12000	PF 1	1300.00	465.00	466.45	466.57	467.05	0.018380	6.19	210.18	237.71	1.16
CNTR-LINE	11500	PF 1	1300.00	456.73	458.28	458.29	458.61	0.015264	4.58	283.75	444.40	1.01
CNTR-LINE	11000	PF 1	1300.00	445.84	447.16	447.40	447.96	0.031403	7.19	180.84	243.95	1.47
CNTR-LINE	10500	PF 1	1300.00	434.96	436.36	436.44	436.96	0.016111	6.22	208.89	212.04	1.11
CNTR-LINE	10000	PF 1	1300.00	428.54	429.58	429.58	429.91	0.014979	4.61	282.20	425.94	1.00
CNTR-LINE	9500	PF 1	1300.00	419.11	420.05	420.16	420.55	0.024027	5.65	230.19	378.91	1.28
CNTR-LINE	9000	PF 1	1300.00	411.04	413.01	413.01	413.44	0.013909	5.30	245.19	283.33	1.00
CNTR-LINE	8500	PF 1	1300.00	403.91	406.40	406.08	406.89	0.006150	5.64	230.66	129.11	0.74
CNTR-LINE	8000	PF 1	1300.00	399.51	402.06	402.06	402.66	0.012404	6.20	209.79	176.36	1.00
CNTR-LINE	7500	PF 1	1300.00	386.24	386.95	387.47	388.85	0.103134	11.06	117.53	202.61	2.56
CNTR-LINE	7000	PF 1	1300.00	376.18	378.64	378.64	379.28	0.012161	6.44	202.01	156.47	1.00
CNTR-LINE	6500	PF 1	1300.00	367.88	369.26	369.63	370.54	0.026653	9.08	143.10	119.00	1.46
CNTR-LINE	6000	PF 1	1300.00	354.66	355.60	355.73	356.09	0.030391	5.64	230.34	435.86	1.37
CNTR-LINE	5500	PF 1	1300.00	343.69	344.73	344.75	345.08	0.016574	4.71	275.92	433.87	1.04
CNTR-LINE	5000	PF 1	1300.00	333.43	334.51	334.59	334.89	0.025620	4.95	262.63	532.48	1.24
CNTR-LINE	4500	PF 1	1300.00	323.63	324.35	324.35	324.56	0.017417	3.67	353.75	839.18	1.00
CNTR-LINE	4000	PF 1	1300.00	312.61	313.82	313.88	314.13	0.025416	4.47	290.90	683.26	1.21
CNTR-LINE	3500	PF 1	1300.00	303.03	304.34	304.34	304.68	0.014913	4.65	279.67	415.09	1.00
CNTR-LINE	3000	PF 1	1300.00	293.67	294.53	294.63	294.89	0.026794	4.82	269.66	588.12	1.25
CNTR-LINE	2500	PF 1	1300.00	284.11	285.04	285.04	285.25	0.017556	3.64	357.39	866.12	1.00
CNTR-LINE	2000	PF 1	1300.00	275.65	276.35	276.35	276.56	0.017200	3.62	358.99	862.50	0.99
CNTR-LINE	1500	PF 1	1300.00	265.90	266.80	266.82	267.04	0.021184	3.93	331.05	823.47	1.09
CNTR-LINE	1000	PF 1	1300.00	257.14	258.27	258.27	258.61	0.015089	4.68	277.81	411.84	1.00

W-Prop 25-year Results

HEC-RAS Plan: Plan 08 River: USG Reach: CNTR-LINE Profile: PF 1

Reach	River Sta	Profile	Q Total	Max Chl Dpth	Min El	Flow Area	Top Width	Invert Slope	Frctn Slope	E.G. Slope	Vel Chnl	Froude # XS
			(cfs)	(ft)	(ft)	(sq ft)	(ft)		(ft/ft)	(ft/ft)	(ft/s)	
CNTR-LINE	23000	PF 1	2000.00	3.90	804.79	310.78	239.66	0.0598	0.012825	0.012034	6.44	1.00
CNTR-LINE	22500	PF 1	2000.00	1.87	774.87	66.17	61.51	0.0649	0.034085	0.339099	30.23	5.14
CNTR-LINE	22000	PF 1	2000.00	2.09	742.43	210.05	206.90	0.0512	0.082336	0.036243	9.52	1.67
CNTR-LINE	21500	PF 1	2000.00	2.65	716.83	127.93	83.76	0.0448	0.044831	0.056877	15.63	2.23
CNTR-LINE	21000	PF 1	2000.00	2.39	694.43	156.92	106.46	0.0594	0.047102	0.039647	12.75	1.85
CNTR-LINE	20500	PF 1	2000.00	2.65	664.74	102.11	54.85	-0.0002	0.051312	0.068999	19.59	2.53
CNTR-LINE	20000	PF 1	2000.00	2.07	664.84	404.19	486.15	0.0307	0.013353	0.012001	4.81	0.97
CNTR-LINE	19500	PF 1	2000.00	0.78	649.51	192.96	563.04	0.0343	0.030412	0.182598	10.36	3.12
CNTR-LINE	19000	PF 1	2000.00	2.39	632.36	317.63	270.83	0.0326	0.032540	0.013070	6.30	1.02
CNTR-LINE	18500	PF 1	2000.00	1.59	616.08	133.59	138.35	0.0309	0.027880	0.095788	14.97	2.69
CNTR-LINE	18000	PF 1	2000.00	2.18	600.64	403.27	602.30	0.0291	0.034036	0.017269	4.96	1.07
CNTR-LINE	17500	PF 1	2000.00	2.29	585.60	268.21	621.33	0.0322	0.028793	0.057318	7.46	2.00
CNTR-LINE	17000	PF 1	2000.00	2.80	570.00	342.40	659.20	0.0260	0.030633	0.019024	5.84	1.43
CNTR-LINE	16500	PF 1	2000.00	1.32	556.99	304.27	658.29	0.0277	0.028669	0.048052	6.57	1.70
CNTR-LINE	16000	PF 1	2000.00	1.63	543.14	292.39	270.67	0.0292	0.026941	0.017209	6.84	1.16
CNTR-LINE	15500	PF 1	2000.00	1.77	528.54	229.15	341.57	0.0310	0.027910	0.052885	8.73	1.88
CNTR-LINE	15000	PF 1	2000.00	2.07	513.05	239.39	182.65	0.0325	0.030536	0.019855	8.35	1.29
CNTR-LINE	14500	PF 1	2000.00	1.68	496.81	170.20	166.41	0.0137	0.030918	0.054652	11.75	2.05
CNTR-LINE	14000	PF 1	2000.00	4.61	489.95	1342.39	390.06	-0.0005	0.000545	0.000175	1.49	0.14
CNTR-LINE	13500	PF 1	2000.00	4.43	489.06	285.70	186.76	0.0106	0.010780	0.009867	7.00	1.00
CNTR-LINE	13000	PF 1	2000.00	1.02	484.91	286.20	350.40	0.0206	0.015129	0.026076	6.99	1.36
CNTR-LINE	12500	PF 1	2000.00	1.35	474.63	335.58	391.89	0.0193	0.020130	0.016007	6.19	1.16
CNTR-LINE	12000	PF 1	2000.00	1.73	465.00	281.87	282.87	0.0165	0.018097	0.020625	7.10	1.25
CNTR-LINE	11500	PF 1	2000.00	1.73	456.73	362.46	510.07	0.0218	0.017136	0.019497	5.52	1.15
CNTR-LINE	11000	PF 1	2000.00	1.69	445.84	280.52	303.73	0.0218	0.021157	0.023038	7.13	1.31
CNTR-LINE	10500	PF 1	2000.00	1.65	434.96	265.04	239.92	0.0128	0.021620	0.020329	7.55	1.27
CNTR-LINE	10000	PF 1	2000.00	1.27	428.54	383.17	452.39	0.0189	0.013536	0.013859	5.22	1.00
CNTR-LINE	9500	PF 1	2000.00	1.11	419.11	293.91	382.54	0.0161	0.018534	0.026044	6.81	1.37
CNTR-LINE	9000	PF 1	2000.00	2.29	411.04	342.81	324.11	0.0143	0.009125	0.012886	5.83	1.00
CNTR-LINE	8500	PF 1	2000.00	3.26	403.61	291.09	129.97	0.0088	0.008748	0.006799	6.87	0.81
CNTR-LINE	8000	PF 1	2000.00	2.98	399.51	290.37	197.76	0.0265	0.011817	0.011672	6.89	1.00
CNTR-LINE	7500	PF 1	2000.00	0.88	386.24	151.75	207.87	0.0201	0.026436	0.107889	13.18	2.72
CNTR-LINE	7000	PF 1	2000.00	2.93	376.18	283.04	182.30	0.0166	0.011803	0.011510	7.07	1.00
CNTR-LINE	6500	PF 1	2000.00	2.02	367.88	226.17	214.62	0.0264	0.017461	0.029580	8.84	1.52
CNTR-LINE	6000	PF 1	2000.00	1.12	354.66	313.18	469.61	0.0219	0.029049	0.028532	6.39	1.38
CNTR-LINE	5500	PF 1	2000.00	1.22	343.69	354.72	441.40	0.0205	0.021929	0.017378	5.64	1.11
CNTR-LINE	5000	PF 1	2000.00	1.24	333.43	350.98	555.85	0.0196	0.020456	0.024432	5.70	1.26
CNTR-LINE	4500	PF 1	2000.00	0.85	323.63	466.57	890.58	0.0220	0.020683	0.017735	4.29	1.04
CNTR-LINE	4000	PF 1	2000.00	1.35	312.61	393.35	745.57	0.0192	0.020794	0.024720	5.08	1.23
CNTR-LINE	3500	PF 1	2000.00	1.51	303.03	375.99	548.42	0.0187	0.018933	0.019080	5.32	1.13
CNTR-LINE	3000	PF 1	2000.00	1.09	293.67	446.51	886.79	0.0191	0.019736	0.020427	4.48	1.11
CNTR-LINE	2500	PF 1	2000.00	1.06	284.11	473.72	941.77	0.0169	0.019245	0.018163	4.22	1.05
CNTR-LINE	2000	PF 1	2000.00	0.84	275.65	479.74	909.29	0.0195	0.017364	0.016618	4.17	1.01
CNTR-LINE	1500	PF 1	2000.00	1.01	265.90	429.41	849.67	0.0175	0.019013	0.021966	4.66	1.15
CNTR-LINE	1000	PF 1	2000.00	1.37	257.14	384.18	467.84			0.013609	5.22	1.02

W-Prop 100-year Results

HEC-RAS Plan: Plan 08   River: USG   Reach: CNTR-LINE   Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
CNTR-LINE	23000	PF 1	3300.00	804.79	809.21	809.21	810.09	0.010833	7.53	438.32	246.35	0.99
CNTR-LINE	22500	PF 1	3300.00	774.87	777.28	778.86	793.24	0.305575	32.07	102.91	80.99	5.01
CNTR-LINE	22000	PF 1	3300.00	742.43	744.94	745.54	746.75	0.038877	10.81	305.38	262.26	1.76
CNTR-LINE	21500	PF 1	3300.00	716.83	720.48	721.34	723.35	0.056813	13.59	242.88	196.11	2.15
CNTR-LINE	21000	PF 1	3300.00	694.43	697.43	698.48	700.78	0.036586	14.69	224.70	115.97	1.86
CNTR-LINE	20500	PF 1	3300.00	664.74	668.14	670.26	675.97	0.068112	22.45	147.01	63.68	2.60
CNTR-LINE	20000	PF 1	3300.00	664.84	667.22	667.22	667.77	0.011682	5.81	558.25	491.79	0.97
CNTR-LINE	19500	PF 1	3300.00	649.51	650.42	650.96	652.79	0.177333	12.36	266.97	585.16	3.22
CNTR-LINE	19000	PF 1	3300.00	632.36	635.36	635.38	635.93	0.013223	6.05	545.54	509.36	1.03
CNTR-LINE	18500	PF 1	3300.00	616.08	618.10	619.02	622.07	0.083357	15.98	206.48	231.38	2.98
CNTR-LINE	18000	PF 1	3300.00	600.64	603.03	603.14	603.62	0.019039	6.14	537.73	627.75	1.17
CNTR-LINE	17500	PF 1	3300.00	586.11	588.09	588.41	589.13	0.049038	8.16	404.54	682.74	1.87
CNTR-LINE	17000	PF 1	3300.00	570.00	573.05	573.22	573.64	0.021021	6.21	531.59	883.69	1.41
CNTR-LINE	16500	PF 1	3300.00	556.99	558.51	558.78	559.38	0.040744	7.48	441.34	688.02	1.64
CNTR-LINE	16000	PF 1	3300.00	543.14	545.28	545.48	546.05	0.018712	7.06	467.70	440.00	1.21
CNTR-LINE	15500	PF 1	3300.00	528.54	530.61	531.07	532.10	0.045360	9.80	336.79	376.11	1.82
CNTR-LINE	15000	PF 1	3300.00	513.05	515.61	516.01	517.15	0.021155	9.97	331.12	203.16	1.38
CNTR-LINE	14500	PF 1	3300.00	496.81	498.96	499.77	501.56	0.049585	12.96	254.73	200.02	2.02
CNTR-LINE	14000	PF 1	3300.00	489.95	495.45	491.89	495.51	0.000232	1.95	1693.03	405.86	0.17
CNTR-LINE	13500	PF 1	3300.00	490.19	494.17	494.17	495.07	0.009570	7.61	433.41	240.85	1.00
CNTR-LINE	13000	PF 1	3300.00	484.91	486.19	486.55	487.34	0.028886	8.61	392.27	495.64	1.49
CNTR-LINE	12500	PF 1	3300.00	474.63	476.33	476.45	477.12	0.014905	7.29	471.22	392.90	1.11
CNTR-LINE	12000	PF 1	3300.00	465.00	467.14	467.42	468.08	0.022523	7.77	424.64	401.36	1.33
CNTR-LINE	11500	PF 1	3300.00	456.73	458.84	458.84	459.34	0.013593	5.66	582.58	599.04	1.01
CNTR-LINE	11000	PF 1	3300.00	445.84	447.83	448.20	448.91	0.035455	8.35	395.14	466.29	1.60
CNTR-LINE	10500	PF 1	3300.00	434.96	437.35	437.42	437.99	0.014491	6.44	512.37	456.34	1.07
CNTR-LINE	10000	PF 1	3300.00	428.54	430.10	430.17	430.73	0.014537	6.37	518.96	482.28	1.07
CNTR-LINE	9500	PF 1	3300.00	419.11	420.53	420.78	421.52	0.023853	8.02	411.86	388.15	1.37
CNTR-LINE	9000	PF 1	3300.00	411.04	413.76	413.76	414.46	0.011784	6.73	490.27	350.50	1.00
CNTR-LINE	8500	PF 1	3300.00	403.91	407.54	407.34	408.72	0.007868	8.72	378.59	131.20	0.90
CNTR-LINE	8000	PF 1	3300.00	399.51	403.12	403.12	404.06	0.010843	7.76	425.20	227.96	1.00
CNTR-LINE	7500	PF 1	3300.00	386.24	387.39	388.38	391.27	0.107500	15.82	208.55	216.33	2.84
CNTR-LINE	7000	PF 1	3300.00	376.18	379.80	379.80	380.72	0.010844	7.70	428.61	231.90	1.00
CNTR-LINE	6500	PF 1	3300.00	367.88	370.28	370.77	371.95	0.032397	10.37	318.38	254.09	1.63
CNTR-LINE	6000	PF 1	3300.00	354.66	356.06	356.28	356.89	0.027159	7.34	449.60	527.24	1.40
CNTR-LINE	5500	PF 1	3300.00	343.69	345.20	345.32	345.90	0.018028	6.69	493.97	489.78	1.17
CNTR-LINE	5000	PF 1	3300.00	333.43	334.91	335.09	335.63	0.023612	6.81	484.63	572.65	1.30
CNTR-LINE	4500	PF 1	3300.00	323.63	324.69	324.74	325.07	0.018671	4.97	663.49	1052.98	1.10
CNTR-LINE	4000	PF 1	3300.00	312.61	314.19	314.29	314.69	0.023147	5.71	577.78	875.59	1.24
CNTR-LINE	3500	PF 1	3300.00	303.03	304.93	304.95	305.31	0.015403	4.98	666.13	936.93	1.03
CNTR-LINE	3000	PF 1	3300.00	293.67	294.92	295.04	295.39	0.026468	5.46	603.90	1080.73	1.29
CNTR-LINE	2500	PF 1	3300.00	284.11	285.32	285.40	285.76	0.021566	5.34	618.21	983.33	1.19
CNTR-LINE	2000	PF 1	3300.00	275.65	276.72	276.72	277.05	0.014926	4.61	716.51	1079.04	1.00
CNTR-LINE	1500	PF 1	3300.00	265.90	267.08	267.20	267.59	0.024648	5.77	571.84	894.47	1.27
CNTR-LINE	1000	PF 1	3300.00	257.14	258.86	258.86	259.42	0.012086	6.01	554.12	493.37	0.98

Ex 10-year Results

HEC-RAS Plan: Plan 05   River: Gyp-FL   Reach: Alignment - (1)   Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - (1)	22500	PF 1	2200.00	804.64	806.74	806.74	807.41	0.012011	6.58	336.06	267.07	1.00
Alignment - (1)	22000	PF 1	2200.00	765.36	766.91	768.49	786.16	0.938896	35.21	62.49	99.30	7.82
Alignment - (1)	21500	PF 1	2200.00	737.52	740.63	740.81	741.33	0.026231	6.48	330.72	438.52	1.34
Alignment - (1)	21000	PF 1	2200.00	709.52	712.52	714.34	719.20	0.087581	20.73	106.12	62.68	2.81
Alignment - (1)	20500	PF 1	2200.00	688.34	691.47	692.40	694.41	0.029604	13.75	160.03	76.86	1.68
Alignment - (1)	20000	PF 1	2200.00	664.77	667.69	669.26	673.23	0.063596	18.88	116.56	62.30	2.43
Alignment - (1)	19500	PF 1	2200.00	654.00	658.45	658.72	660.20	0.012338	10.63	207.06	76.51	1.14
Alignment - (1)	19000	PF 1	2200.00	646.86	648.93	649.24	649.96	0.038130	8.13	270.46	350.54	1.63
Alignment - (1)	18500	PF 1	2200.00	630.32	632.42	632.71	633.40	0.028963	7.94	277.14	303.11	1.46
Alignment - (1)	18000	PF 1	2200.00	614.97	616.28	616.54	617.19	0.036413	7.69	286.20	390.05	1.58
Alignment - (1)	17500	PF 1	2200.00	596.75	598.86	599.20	600.03	0.032305	8.66	253.99	264.57	1.56
Alignment - (1)	17000	PF 1	2200.00	583.18	585.06	585.35	586.07	0.022838	8.44	274.10	249.30	1.36
Alignment - (1)	16500	PF 1	2200.00	571.38	572.25	572.36	572.69	0.032871	5.34	417.99	940.37	1.39
Alignment - (1)	16000	PF 1	2200.00	557.30	558.02	558.13	558.41	0.024650	4.06	464.84	1047.52	1.16
Alignment - (1)	15500	PF 1	2200.00	540.64	542.77	543.10	543.88	0.032180	8.49	259.11	277.21	1.55
Alignment - (1)	15000	PF 1	2200.00	509.61	510.82	511.92	515.46	0.121801	17.29	127.27	126.63	3.04
Alignment - (1)	14500	PF 1	2200.00	504.68	506.77	506.77	507.73	0.010814	7.87	279.67	146.98	1.00
Alignment - (1)	14000	PF 1	2200.00	494.99	495.87	496.32	497.39	0.053232	9.89	222.50	276.34	1.94
Alignment - (1)	13500	PF 1	2200.00	487.86	489.80	489.80	490.30	0.013427	5.67	387.76	394.48	1.01
Alignment - (1)	13000	PF 1	2200.00	479.12	480.66	480.83	481.40	0.024585	6.91	318.39	379.35	1.33
Alignment - (1)	12500	PF 1	2200.00	470.43	472.53	472.53	473.11	0.012786	6.09	361.02	318.02	1.01
Alignment - (1)	12000	PF 1	2200.00	461.64	463.55	463.88	464.52	0.023993	7.92	277.74	264.71	1.36
Alignment - (1)	11500	PF 1	2200.00	454.42	455.63	455.63	456.09	0.013880	5.42	405.96	453.48	1.01
Alignment - (1)	11000	PF 1	2200.00	444.95	446.29	446.51	447.14	0.023706	7.39	297.89	312.53	1.33
Alignment - (1)	10500	PF 1	2200.00	435.24	436.86	436.89	437.35	0.016120	5.61	392.12	465.28	1.08
Alignment - (1)	10000	PF 1	2200.00	427.03	428.66	428.68	429.07	0.016916	5.17	425.87	592.40	1.07
Alignment - (1)	9500	PF 1	2200.00	419.38	420.34	420.37	420.67	0.016671	4.84	487.66	866.32	1.05
Alignment - (1)	9000	PF 1	2200.00	409.10	410.48	410.61	411.09	0.022292	6.27	350.97	449.59	1.25
Alignment - (1)	8500	PF 1	2200.00	389.73	394.67	393.11	395.04	0.001989	4.88	450.89	134.71	0.47
Alignment - (1)	8000	PF 1	2200.00	390.90	392.56	392.56	392.90	0.014920	4.68	469.69	689.45	1.00
Alignment - (1)	7500	PF 1	2200.00	379.39	380.69	381.05	381.77	0.035640	8.34	263.73	312.47	1.60
Alignment - (1)	7000	PF 1	2200.00	372.73	374.21	374.21	374.53	0.013712	4.63	496.79	764.12	0.97
Alignment - (1)	6500	PF 1	2200.00	361.62	362.98	363.31	364.11	0.032620	8.55	263.03	392.68	1.56
Alignment - (1)	6000	PF 1	2200.00	351.72	352.78	352.78	353.11	0.015264	4.67	470.96	705.44	1.01
Alignment - (1)	5500	PF 1	2200.00	339.96	341.01	341.20	341.65	0.037926	6.43	342.06	628.23	1.54
Alignment - (1)	5000	PF 1	2200.00	329.96	331.19	331.19	331.54	0.015518	4.70	467.70	701.84	1.02
Alignment - (1)	4500	PF 1	2200.00	319.97	320.97	321.08	321.40	0.027569	5.28	416.98	811.31	1.30
Alignment - (1)	4000	PF 1	2200.00	309.87	311.04	311.10	311.47	0.015034	5.32	426.99	615.04	1.04
Alignment - (1)	3500	PF 1	2200.00	300.63	301.58	301.62	301.86	0.025377	4.32	510.44	1263.54	1.20
Alignment - (1)	3000	PF 1	2200.00	290.38	291.56	291.56	291.88	0.016170	4.51	488.03	805.71	1.02
Alignment - (1)	2500	PF 1	2200.00	280.41	281.96	282.04	282.38	0.022798	5.24	420.57	733.26	1.21
Alignment - (1)	2000	PF 1	2200.00	271.54	272.60	272.63	272.93	0.015578	4.90	495.70	875.99	1.03
Alignment - (1)	1500	PF 1	2200.00	262.67	263.64	263.71	264.01	0.020412	4.84	461.76	951.16	1.13

Ex 25-year Results

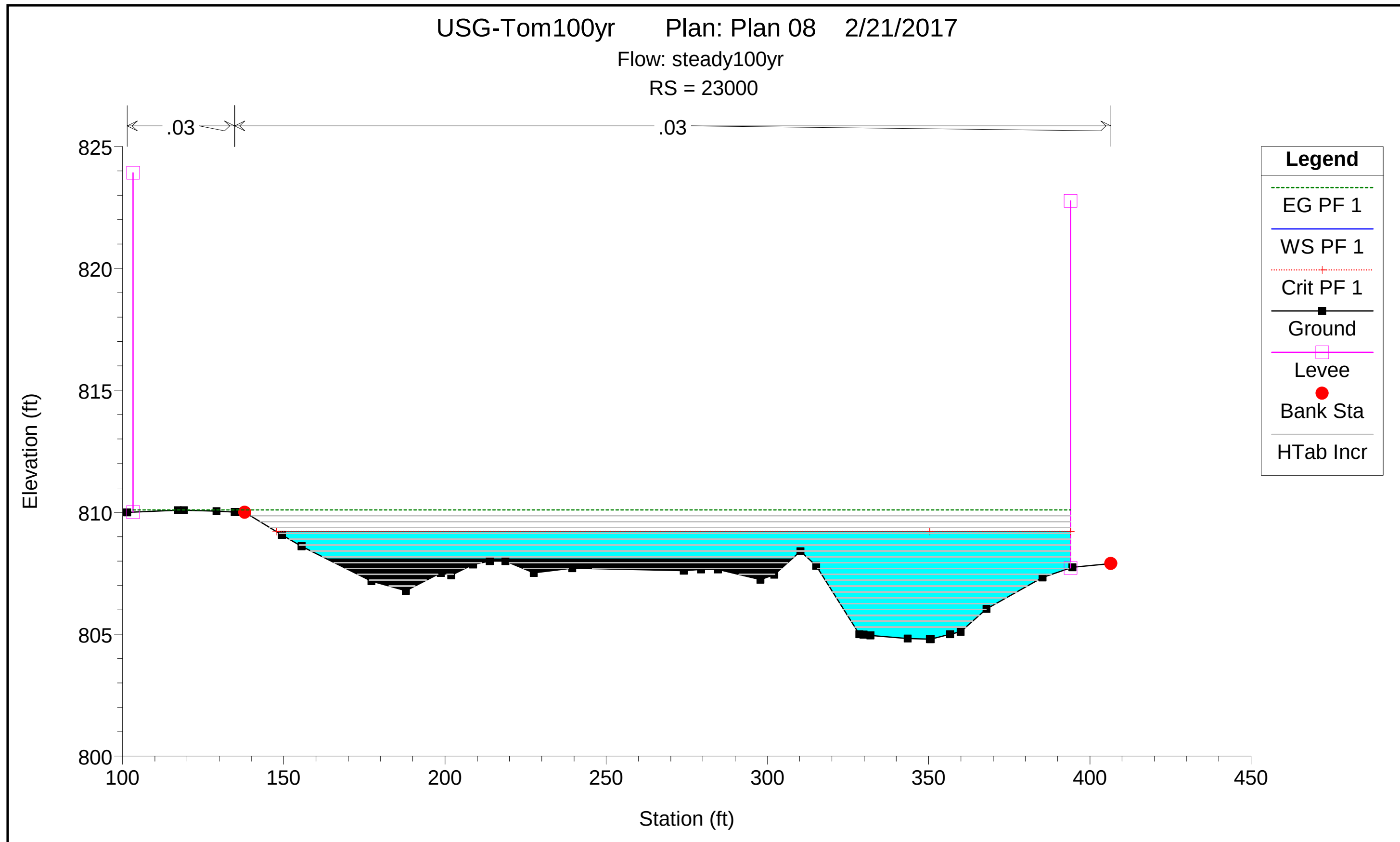
HEC-RAS Plan: Plan 04   River: Gyp-FL   Reach: Alignment - (1)   Profile: PF 1

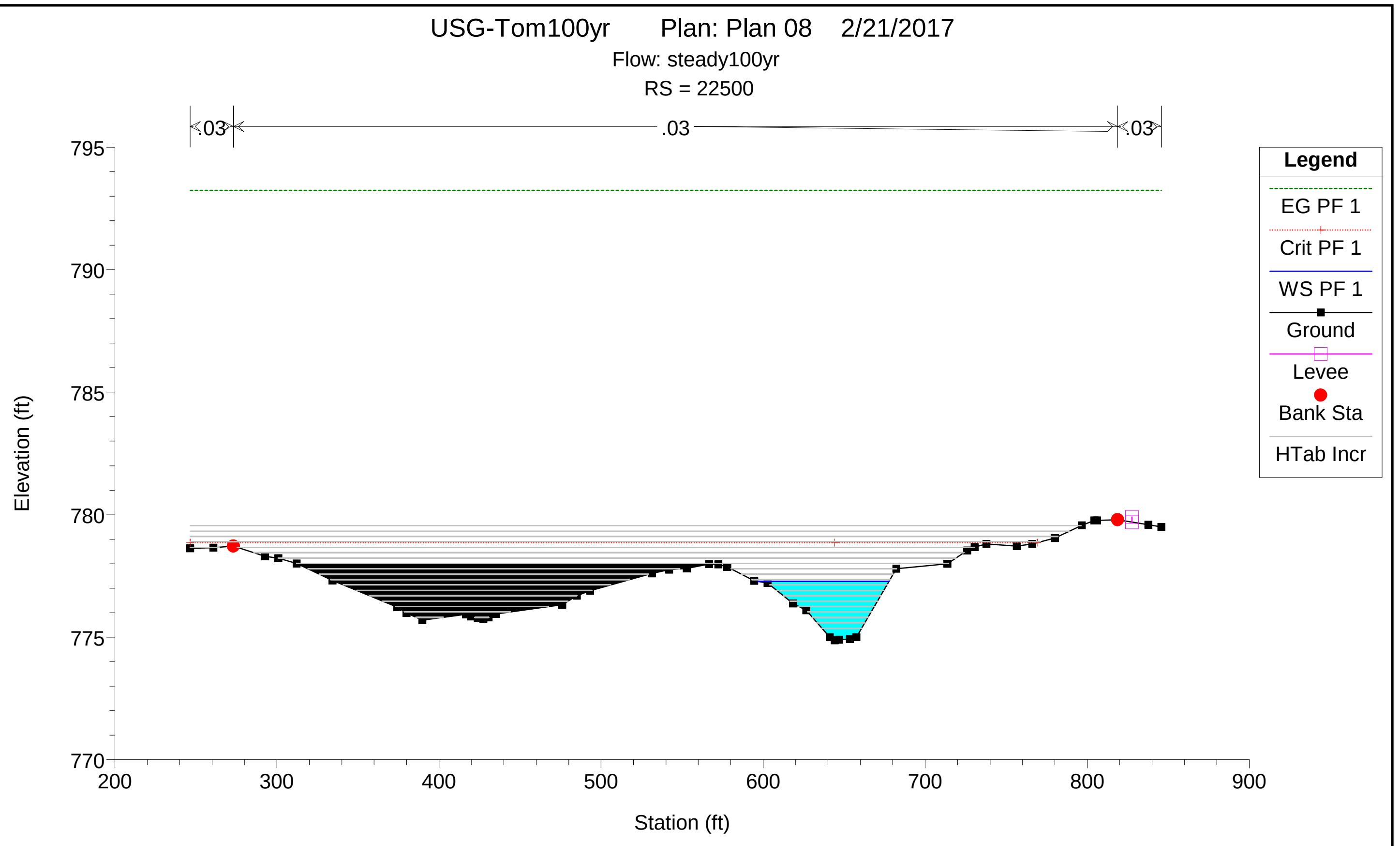
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - (1)	22500	PF 1	3500.00	804.64	807.33	807.33	808.05	0.010189	6.90	527.27	376.05	0.95
Alignment - (1)	22000	PF 1	3500.00	765.36	767.18	769.01	789.35	0.848264	37.78	92.63	122.70	7.66
Alignment - (1)	21500	PF 1	3500.00	737.52	740.89	741.20	741.83	0.028280	7.80	450.67	499.53	1.44
Alignment - (1)	21000	PF 1	3500.00	709.52	713.37	715.26	719.92	0.074778	20.54	170.42	90.75	2.64
Alignment - (1)	20500	PF 1	3500.00	688.34	692.18	693.44	696.19	0.031054	16.06	217.89	85.50	1.77
Alignment - (1)	20000	PF 1	3500.00	664.77	668.51	670.23	674.47	0.063601	19.60	178.57	90.18	2.45
Alignment - (1)	19500	PF 1	3500.00	654.00	659.48	659.86	661.72	0.011959	12.02	291.14	87.21	1.16
Alignment - (1)	19000	PF 1	3500.00	646.86	649.12	649.67	650.77	0.049796	10.29	340.01	378.19	1.91
Alignment - (1)	18500	PF 1	3500.00	630.32	632.85	633.19	633.91	0.023899	8.25	424.05	378.73	1.37
Alignment - (1)	18000	PF 1	3500.00	614.97	616.47	616.97	617.91	0.044699	9.65	362.72	409.71	1.81
Alignment - (1)	17500	PF 1	3500.00	596.75	599.26	599.67	600.71	0.027307	9.66	362.46	282.77	1.50
Alignment - (1)	17000	PF 1	3500.00	583.18	585.44	585.91	586.76	0.026363	9.22	379.12	308.20	1.47
Alignment - (1)	16500	PF 1	3500.00	571.38	572.42	572.56	573.00	0.029729	6.18	574.18	984.97	1.39
Alignment - (1)	16000	PF 1	3500.00	557.30	558.15	558.30	558.71	0.027112	5.19	606.34	1059.06	1.28
Alignment - (1)	15500	PF 1	3500.00	540.64	543.16	543.57	544.52	0.027845	9.36	373.89	309.97	1.50
Alignment - (1)	15000	PF 1	3500.00	509.61	511.12	512.68	518.03	0.128575	21.09	165.96	127.40	3.26
Alignment - (1)	14500	PF 1	3500.00	504.68	507.46	507.46	508.76	0.009841	9.15	382.62	148.99	1.01
Alignment - (1)	14000	PF 1	3500.00	494.99	496.08	496.77	498.51	0.063694	12.51	279.80	279.37	2.20
Alignment - (1)	13500	PF 1	3500.00	487.86	490.18	490.19	490.81	0.012524	6.36	550.59	448.23	1.01
Alignment - (1)	13000	PF 1	3500.00	479.12	480.92	481.22	482.01	0.026978	8.38	417.75	399.68	1.44
Alignment - (1)	12500	PF 1	3500.00	470.43	472.99	472.99	473.66	0.012394	6.55	534.19	412.36	1.01
Alignment - (1)	12000	PF 1	3500.00	461.64	464.03	464.32	465.03	0.025517	8.02	436.21	427.07	1.40
Alignment - (1)	11500	PF 1	3500.00	454.42	455.96	455.96	456.58	0.012479	6.31	554.96	455.83	1.01
Alignment - (1)	11000	PF 1	3500.00	444.95	446.66	447.04	447.71	0.026857	8.24	424.73	415.14	1.44
Alignment - (1)	10500	PF 1	3500.00	435.24	437.18	437.23	437.81	0.014860	6.38	548.44	504.67	1.08
Alignment - (1)	10000	PF 1	3500.00	427.03	428.88	428.98	429.47	0.018798	6.17	567.40	654.49	1.17
Alignment - (1)	9500	PF 1	3500.00	419.38	420.55	420.58	420.99	0.015359	5.53	670.20	875.48	1.05
Alignment - (1)	9000	PF 1	3500.00	409.10	410.72	410.93	411.63	0.023263	7.62	459.11	452.49	1.33
Alignment - (1)	8500	PF 1	3500.00	389.73	392.83	393.98	396.58	0.038766	15.54	225.28	111.12	1.92
Alignment - (1)	8000	PF 1	3500.00	390.90	392.83	392.83	393.23	0.013695	5.08	689.37	840.91	0.99
Alignment - (1)	7500	PF 1	3500.00	379.39	381.01	381.45	382.32	0.038791	9.18	381.43	417.28	1.69
Alignment - (1)	7000	PF 1	3500.00	372.73	374.43	374.43	374.86	0.014089	5.38	670.96	809.93	1.01
Alignment - (1)	6500	PF 1	3500.00	361.62	363.29	363.78	364.64	0.030017	9.55	396.83	452.77	1.55
Alignment - (1)	6000	PF 1	3500.00	351.72	352.98	353.02	353.47	0.016653	5.60	626.73	782.63	1.09
Alignment - (1)	5500	PF 1	3500.00	339.96	341.22	341.48	342.05	0.032968	7.28	483.81	730.98	1.50
Alignment - (1)	5000	PF 1	3500.00	329.96	331.50	331.50	331.86	0.014929	4.83	724.19	1013.70	1.01
Alignment - (1)	4500	PF 1	3500.00	319.97	321.15	321.28	321.71	0.029620	6.05	578.46	966.98	1.38
Alignment - (1)	4000	PF 1	3500.00	309.87	311.33	311.41	311.85	0.014126	5.90	634.24	814.34	1.04
Alignment - (1)	3500	PF 1	3500.00	300.63	301.69	301.79	302.13	0.028514	5.26	658.75	1300.47	1.31
Alignment - (1)	3000	PF 1	3500.00	290.38	291.79	291.79	292.21	0.014310	5.17	679.51	856.26	1.01
Alignment - (1)	2500	PF 1	3500.00	280.41	282.12	282.33	282.76	0.026007	6.43	555.62	925.32	1.33
Alignment - (1)	2000	PF 1	3500.00	271.54	272.84	272.85	273.22	0.014037	5.21	721.97	988.08	1.00
Alignment - (1)	1500	PF 1	3500.00	262.67	263.79	263.92	264.33	0.022720	5.96	608.80	1000.00	1.24

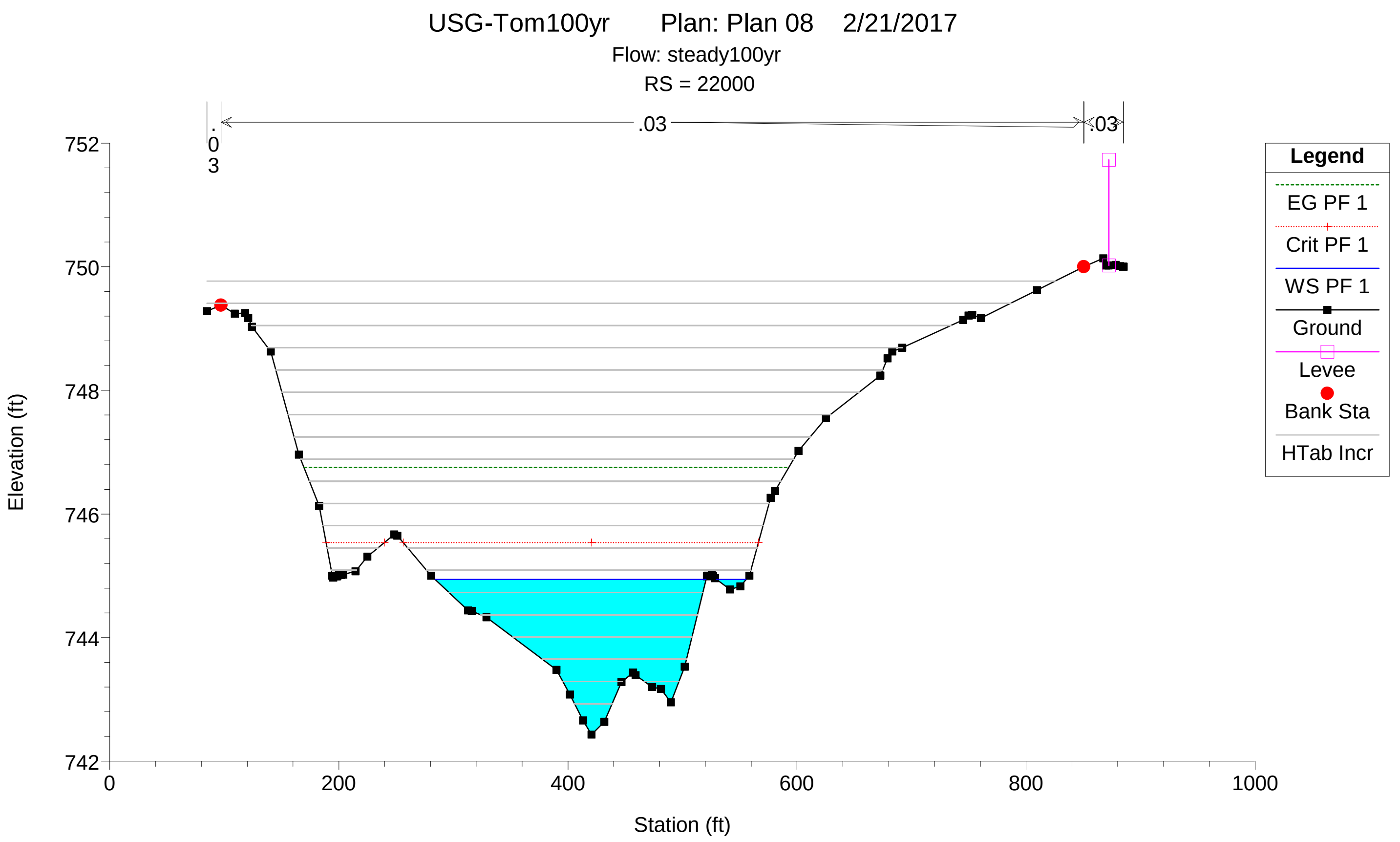
Ex 100-year Results

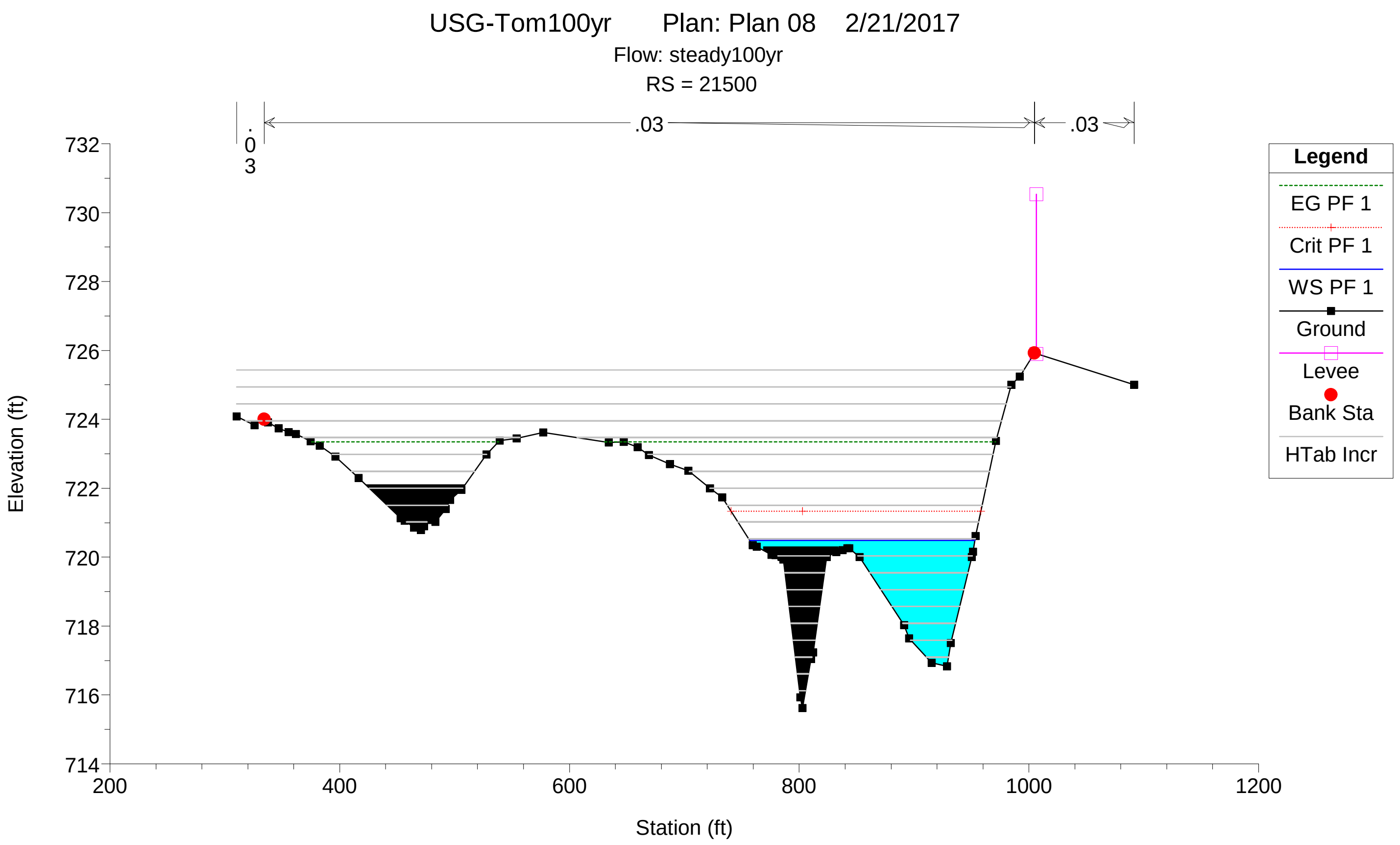
HEC-RAS Plan: Plan 05   River: Gyp-FL   Reach: Alignment - (1)   Profile: PF 1

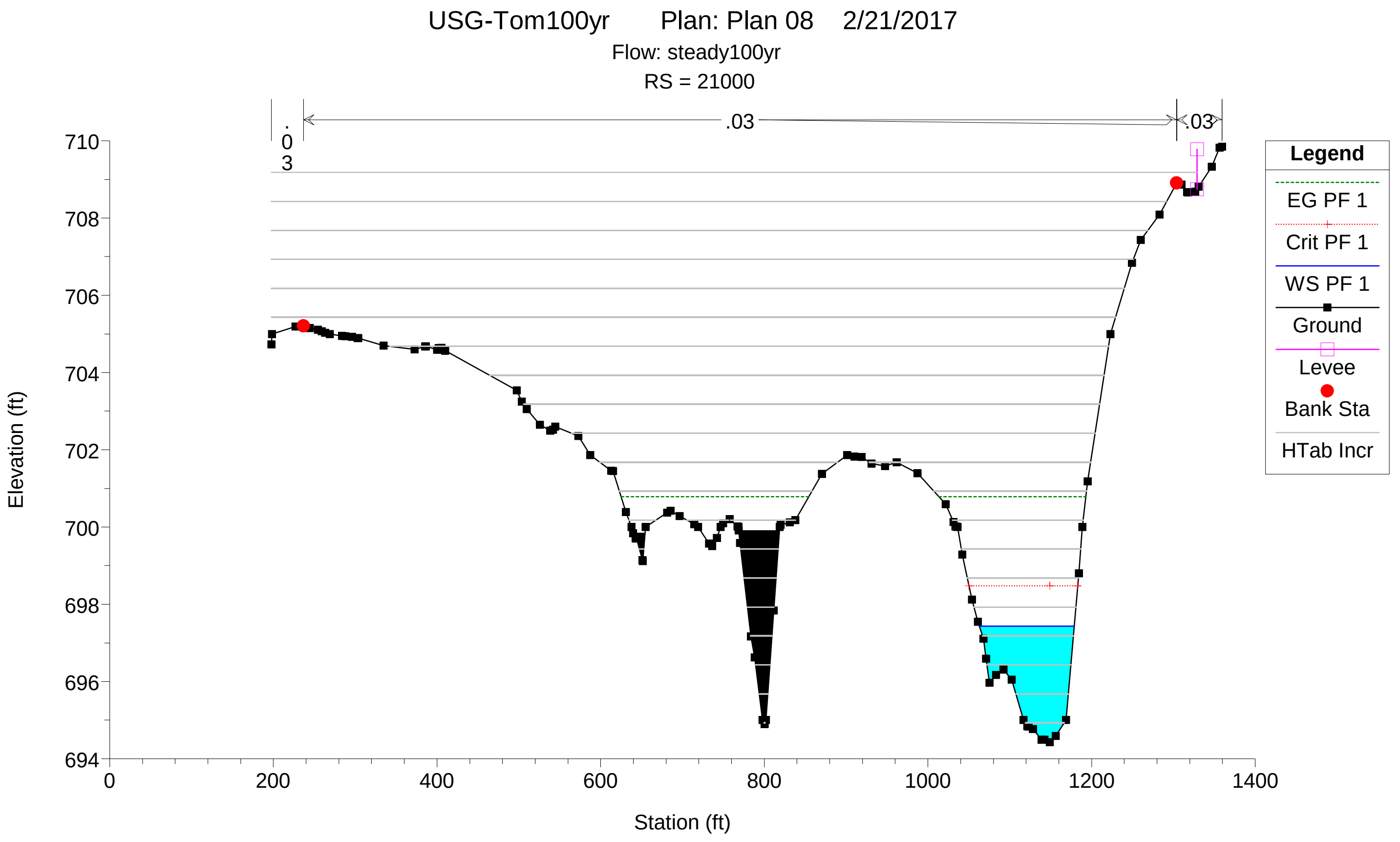
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Alignment - (1)	22500	PF 1	5800.00	804.64	807.93	807.93	808.88	0.009134	7.99	760.56	396.79	0.95
Alignment - (1)	22000	PF 1	5800.00	765.36	767.58	769.75	791.86	0.684093	39.54	146.67	154.41	7.15
Alignment - (1)	21500	PF 1	5800.00	737.52	741.27	741.57	742.40	0.030634	8.32	682.54	702.11	1.51
Alignment - (1)	21000	PF 1	5800.00	709.52	714.44	716.02	720.46	0.067080	19.68	294.72	154.34	2.51
Alignment - (1)	20500	PF 1	5800.00	688.34	693.22	695.63	698.57	0.030326	18.56	312.52	96.43	1.82
Alignment - (1)	20000	PF 1	5800.00	664.77	669.34	671.33	676.86	0.065648	22.01	263.57	114.48	2.56
Alignment - (1)	19500	PF 1	5800.00	654.00	660.84	661.41	663.80	0.011872	13.81	419.91	101.43	1.20
Alignment - (1)	19000	PF 1	5800.00	646.86	649.37	650.17	652.10	0.064587	13.26	437.94	464.29	2.25
Alignment - (1)	18500	PF 1	5800.00	630.32	633.46	633.69	634.48	0.021125	8.13	713.69	594.60	1.31
Alignment - (1)	18000	PF 1	5800.00	614.97	616.86	617.37	618.54	0.053071	10.39	558.02	641.09	1.96
Alignment - (1)	17500	PF 1	5800.00	596.75	599.87	600.52	601.64	0.023366	10.68	542.83	323.68	1.45
Alignment - (1)	17000	PF 1	5800.00	583.18	585.91	586.51	587.67	0.031220	9.79	553.16	428.04	1.59
Alignment - (1)	16500	PF 1	5800.00	571.38	572.66	572.86	573.46	0.026703	7.28	808.69	984.97	1.39
Alignment - (1)	16000	PF 1	5800.00	557.30	558.34	558.56	559.18	0.030250	6.68	809.12	1130.05	1.42
Alignment - (1)	15500	PF 1	5800.00	540.64	543.73	544.23	545.35	0.023998	10.21	568.16	369.97	1.45
Alignment - (1)	15000	PF 1	5800.00	509.61	511.62	513.81	521.52	0.121491	25.25	229.72	128.66	3.33
Alignment - (1)	14500	PF 1	5800.00	504.68	508.60	508.60	510.25	0.008999	10.29	563.73	171.50	1.00
Alignment - (1)	14000	PF 1	5800.00	494.99	496.39	497.45	500.23	0.071209	15.71	369.11	284.56	2.43
Alignment - (1)	13500	PF 1	5800.00	487.86	490.67	490.68	491.54	0.011336	7.48	775.35	458.80	1.01
Alignment - (1)	13000	PF 1	5800.00	479.12	481.29	481.75	482.87	0.029156	10.10	574.21	439.89	1.56
Alignment - (1)	12500	PF 1	5800.00	470.43	473.55	473.56	474.41	0.011364	7.46	777.37	462.66	1.01
Alignment - (1)	12000	PF 1	5800.00	461.64	464.39	464.88	465.83	0.029623	9.66	600.70	498.28	1.55
Alignment - (1)	11500	PF 1	5800.00	454.42	456.44	456.44	457.31	0.011282	7.46	776.99	459.36	1.01
Alignment - (1)	11000	PF 1	5800.00	444.95	447.07	447.46	448.37	0.032037	9.17	632.41	600.94	1.58
Alignment - (1)	10500	PF 1	5800.00	435.24	437.67	437.72	438.46	0.013125	7.16	810.37	572.01	1.06
Alignment - (1)	10000	PF 1	5800.00	427.03	429.20	429.41	430.02	0.022474	7.27	797.61	821.78	1.30
Alignment - (1)	9500	PF 1	5800.00	419.38	420.87	420.90	421.45	0.013430	6.32	957.60	891.62	1.04
Alignment - (1)	9000	PF 1	5800.00	409.10	411.06	411.42	412.46	0.025038	9.50	610.36	456.43	1.45
Alignment - (1)	8500	PF 1	5800.00	389.73	393.82	395.23	398.30	0.030810	16.98	341.56	123.29	1.80
Alignment - (1)	8000	PF 1	5800.00	390.90	393.14	393.14	393.72	0.013196	6.09	951.87	858.88	1.02
Alignment - (1)	7500	PF 1	5800.00	379.39	381.42	381.91	383.00	0.039688	10.07	575.73	556.82	1.75
Alignment - (1)	7000	PF 1	5800.00	372.73	374.78	374.78	375.35	0.012058	6.20	966.43	904.60	0.99
Alignment - (1)	6500	PF 1	5800.00	361.62	363.79	364.10	364.85	0.040320	8.11	704.42	935.97	1.67
Alignment - (1)	6000	PF 1	5800.00	351.72	353.34	353.37	353.98	0.013498	6.42	911.24	801.44	1.04
Alignment - (1)	5500	PF 1	5800.00	339.96	341.41	341.83	342.77	0.043401	9.40	631.43	825.70	1.78
Alignment - (1)	5000	PF 1	5800.00	329.96	331.79	331.79	332.27	0.014004	5.55	1044.18	1130.50	1.02
Alignment - (1)	4500	PF 1	5800.00	319.97	321.35	321.58	322.21	0.031035	7.43	780.60	992.84	1.48
Alignment - (1)	4000	PF 1	5800.00	309.87	311.70	311.80	312.29	0.013770	6.43	968.94	989.24	1.05
Alignment - (1)	3500	PF 1	5800.00	300.63	301.87	302.05	302.52	0.030193	6.23	901.21	1396.86	1.40
Alignment - (1)	3000	PF 1	5800.00	290.38	292.12	292.13	292.68	0.013043	6.02	974.71	939.85	1.01
Alignment - (1)	2500	PF 1	5800.00	280.41	282.34	282.62	283.26	0.029360	7.84	791.14	1232.90	1.47
Alignment - (1)	2000	PF 1	5800.00	271.54	273.14	273.14	273.64	0.013115	5.87	1035.91	1066.83	1.01
Alignment - (1)	1500	PF 1	5800.00	262.67	264.01	264.21	264.81	0.024192	7.34	824.86	1000.00	1.34

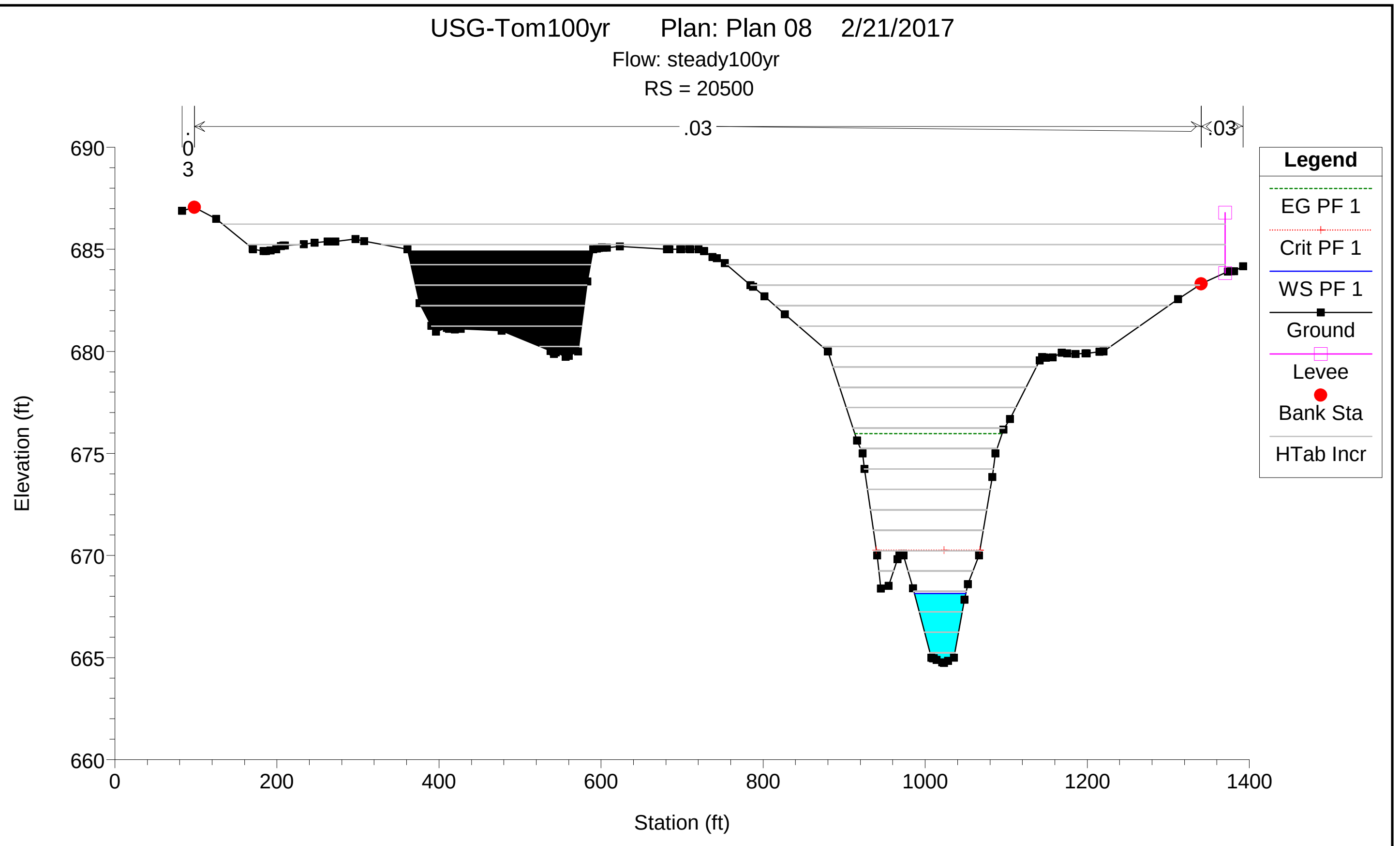

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 23000

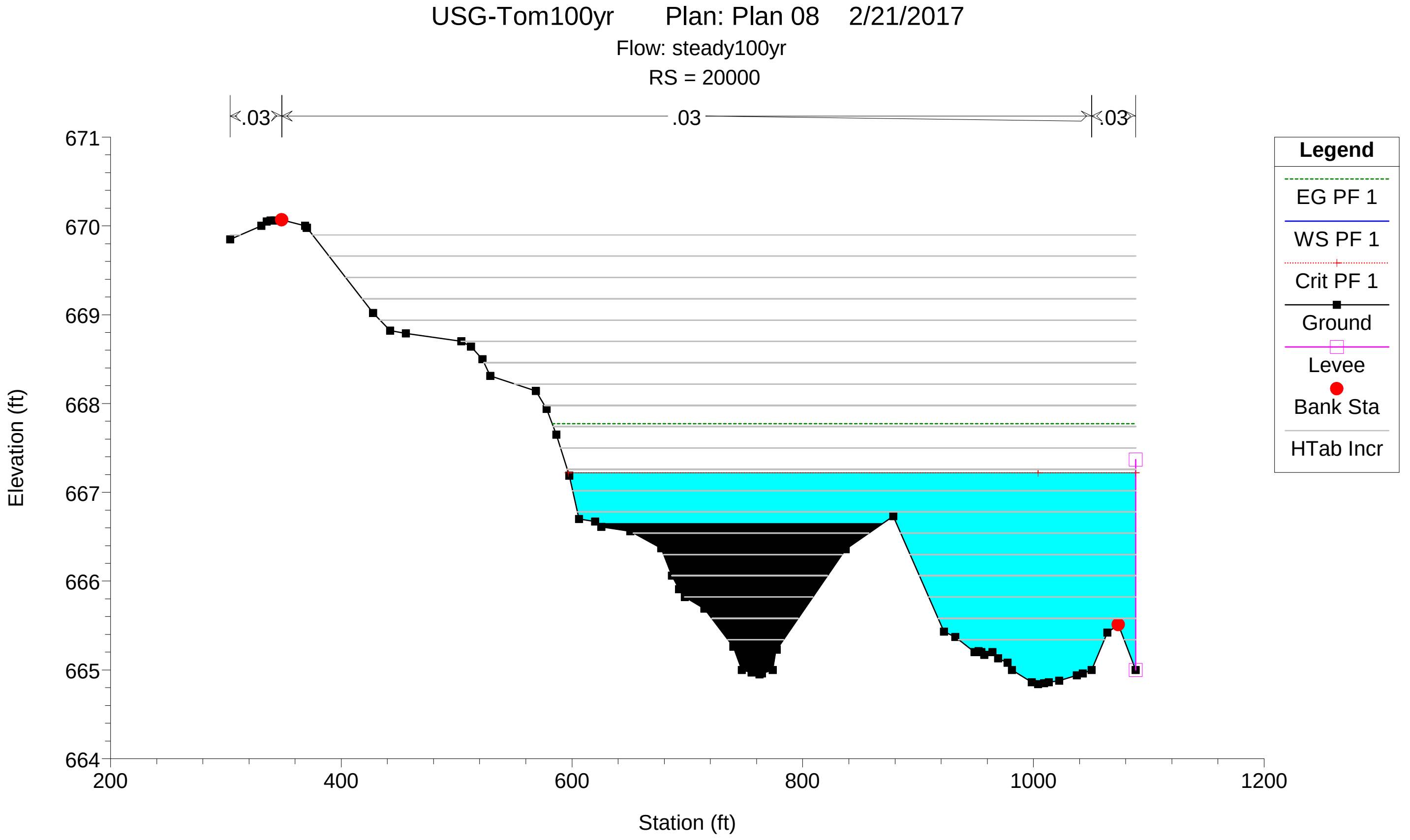

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 22500

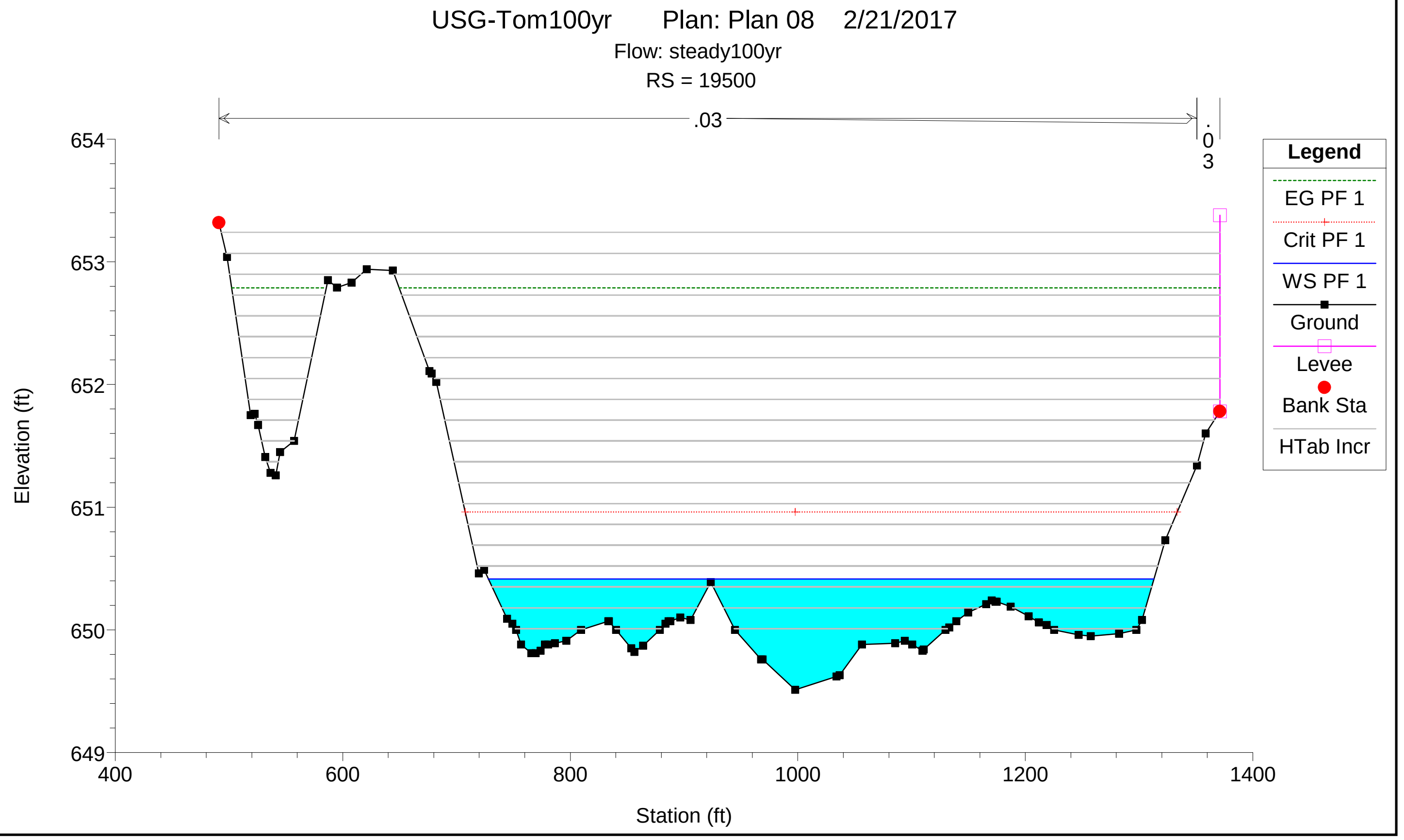

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 22000

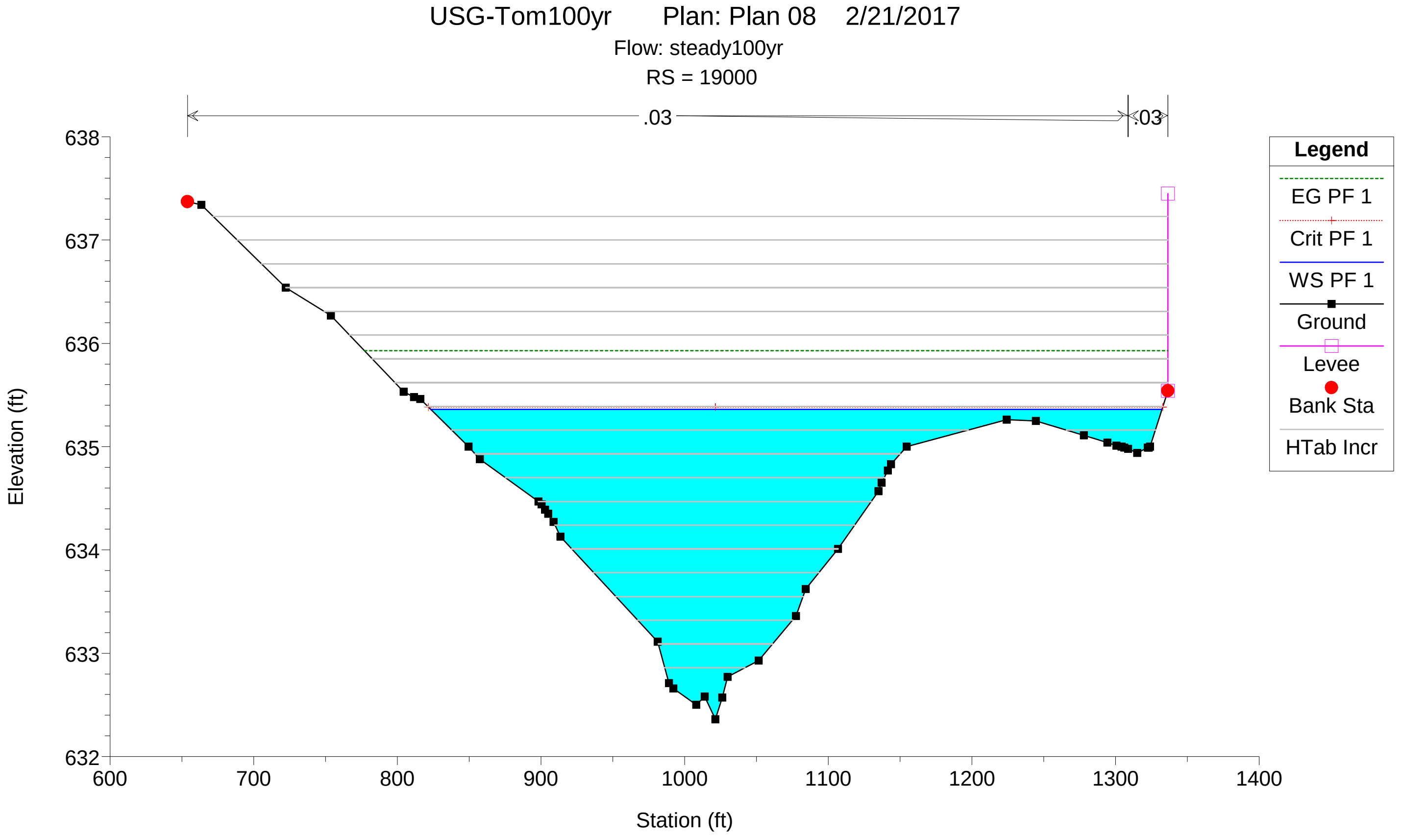

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 21500

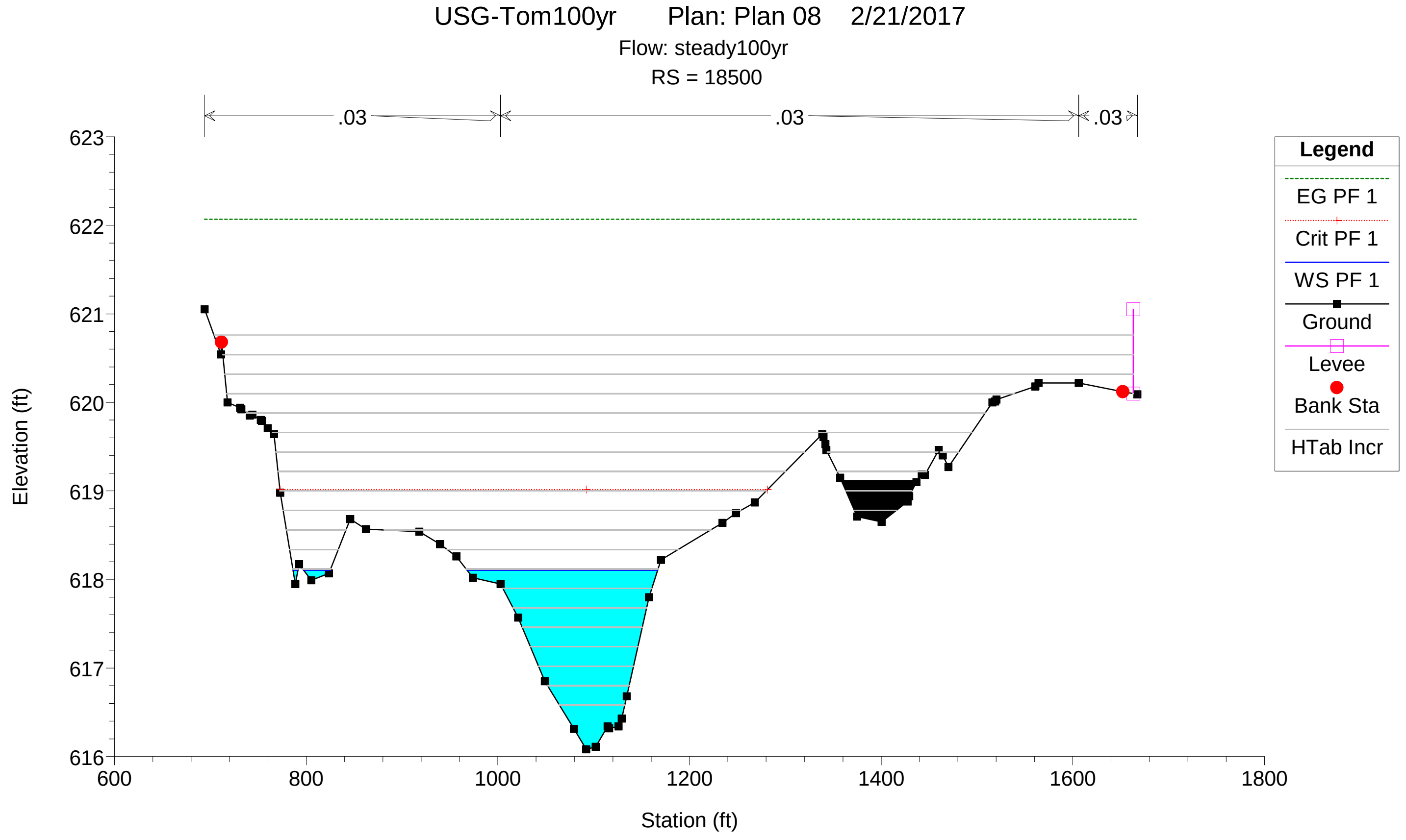

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 21000
.03
.03
.03
Elevation (ft)
710
708
706
704
702
700
698
696
694
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

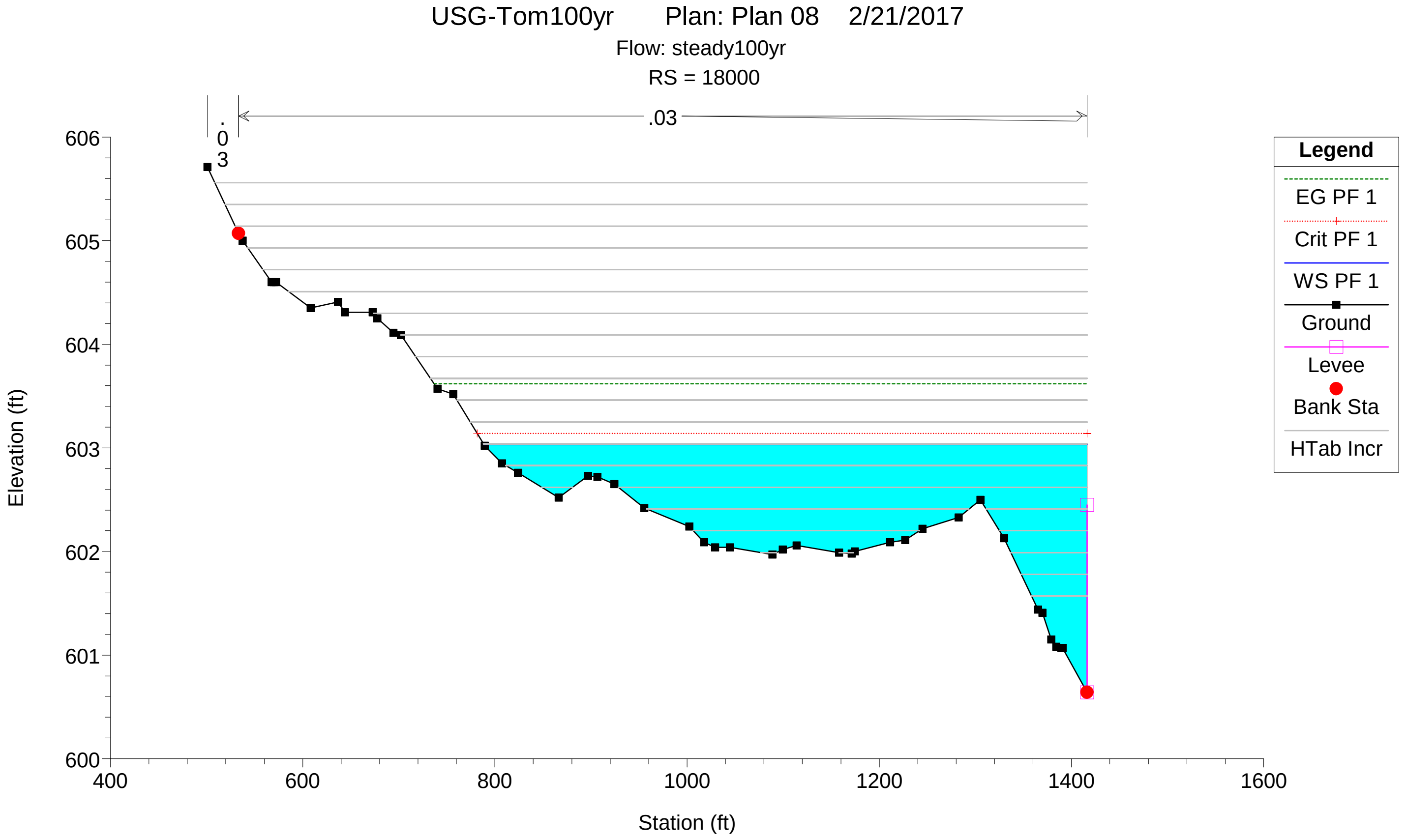

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 20500
.03
.03
.03
Elevation (ft)
690
685
680
675
670
665
660
0
200
400
600
800
1000
1200
1400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

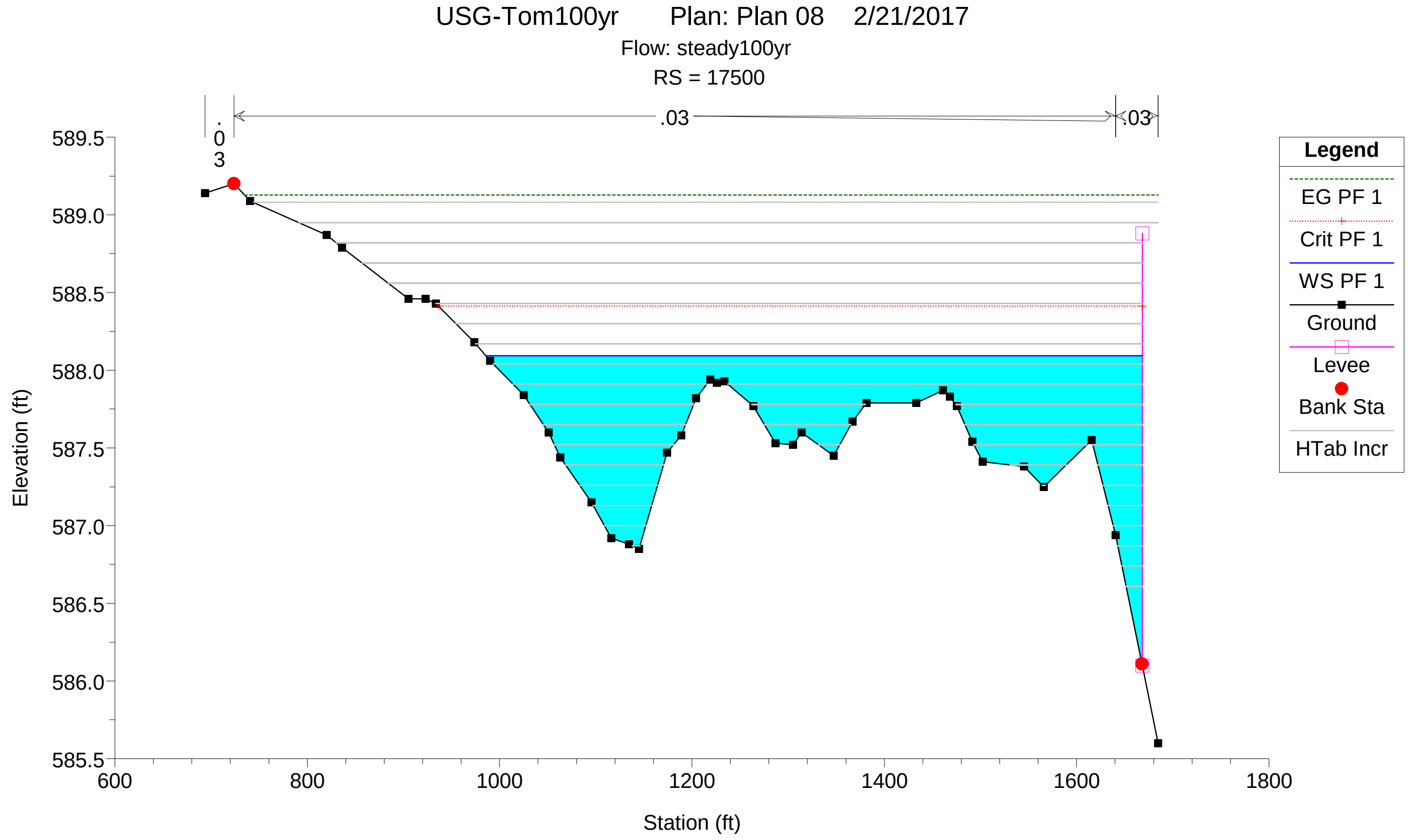

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 20000
.03
.03
.03
Elevation (ft)
671
670
669
668
667
666
665
664
200
400
600
800
1000
1200
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr

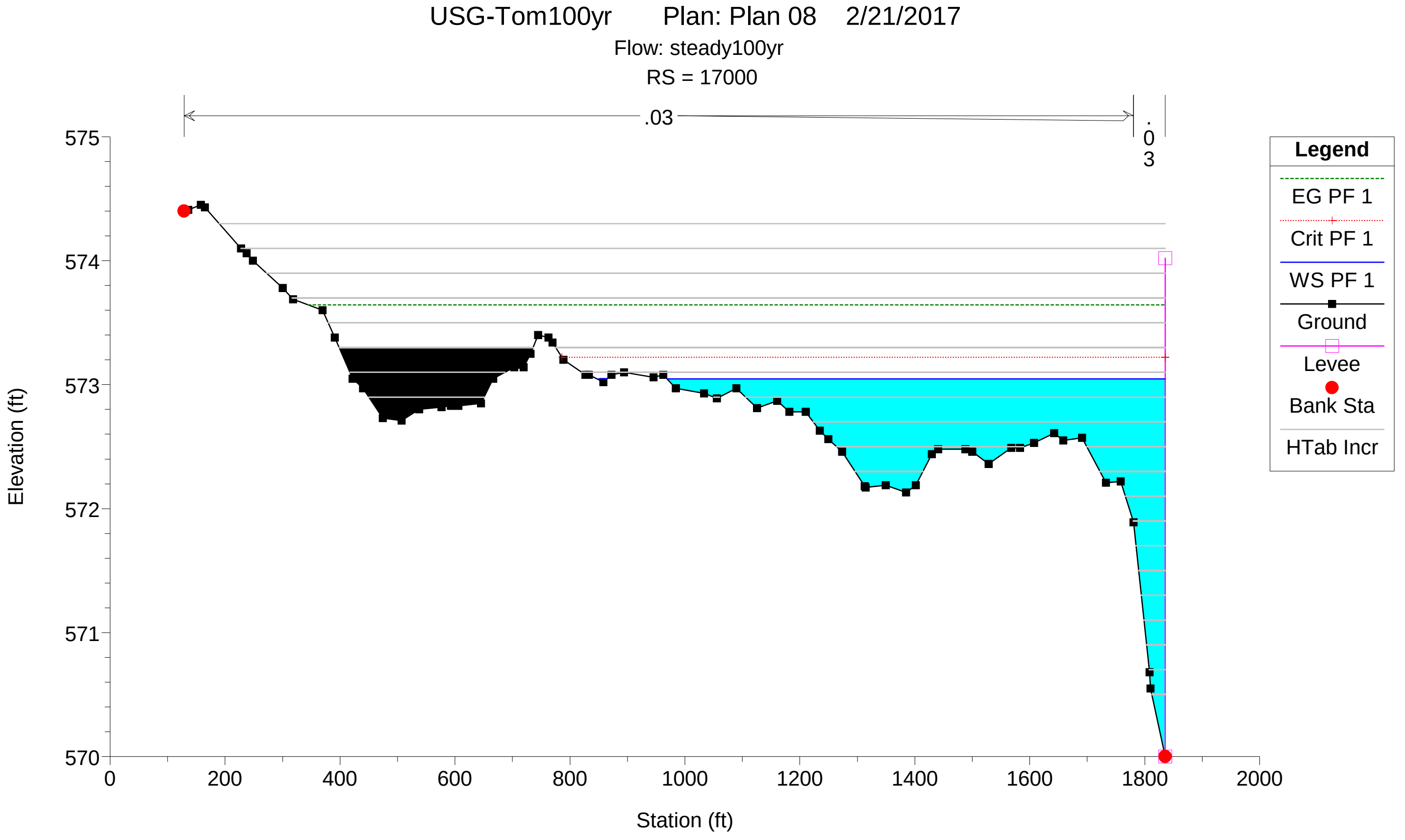

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 19500
.03
.03
Elevation (ft)
654
653
652
651
650
649
400
600
800
1000
1200
1400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

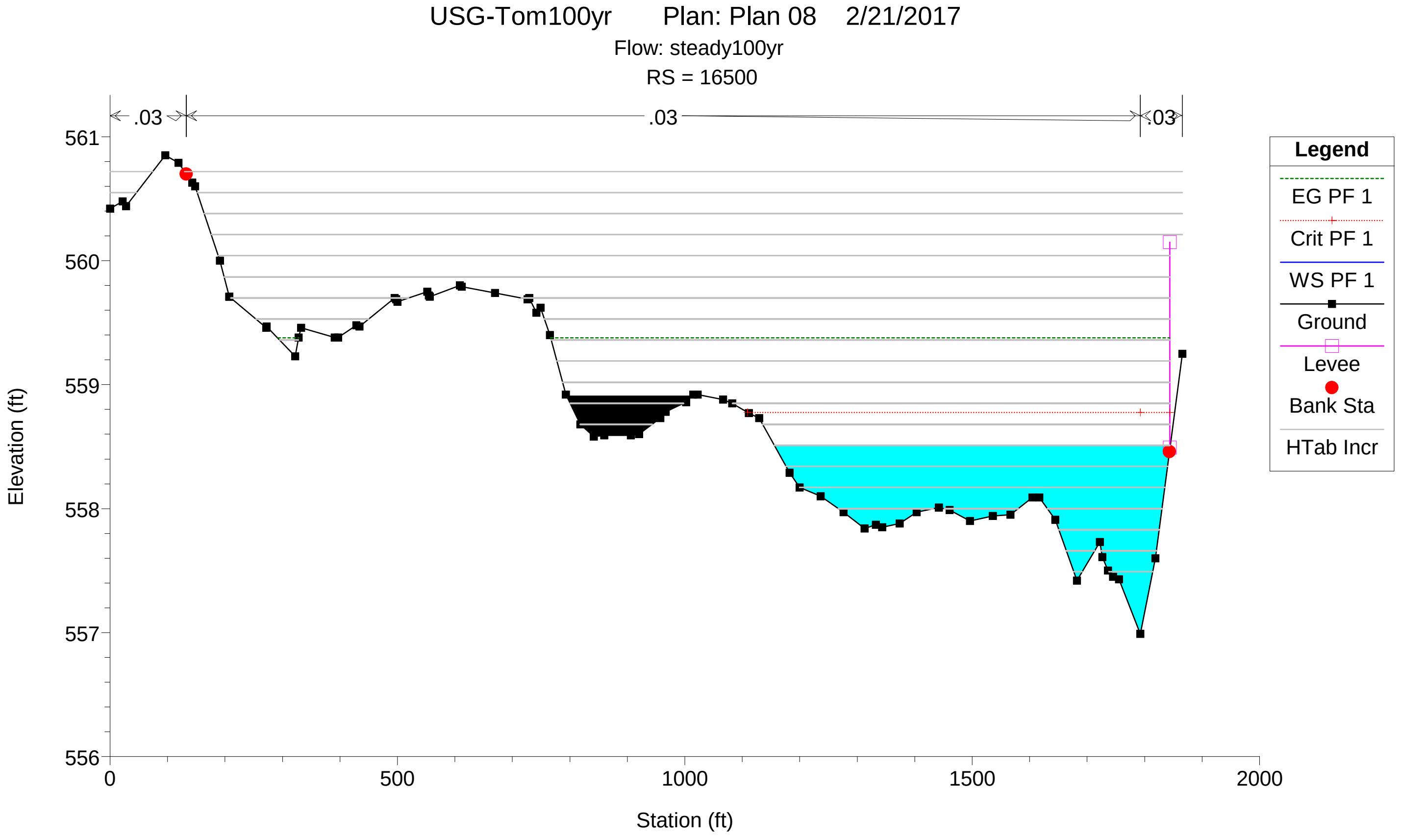

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 19000
.03
.03
638
637
636
635
634
633
632
Elevation (ft)
600
700
800
900
1000
1100
1200
1300
1400
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

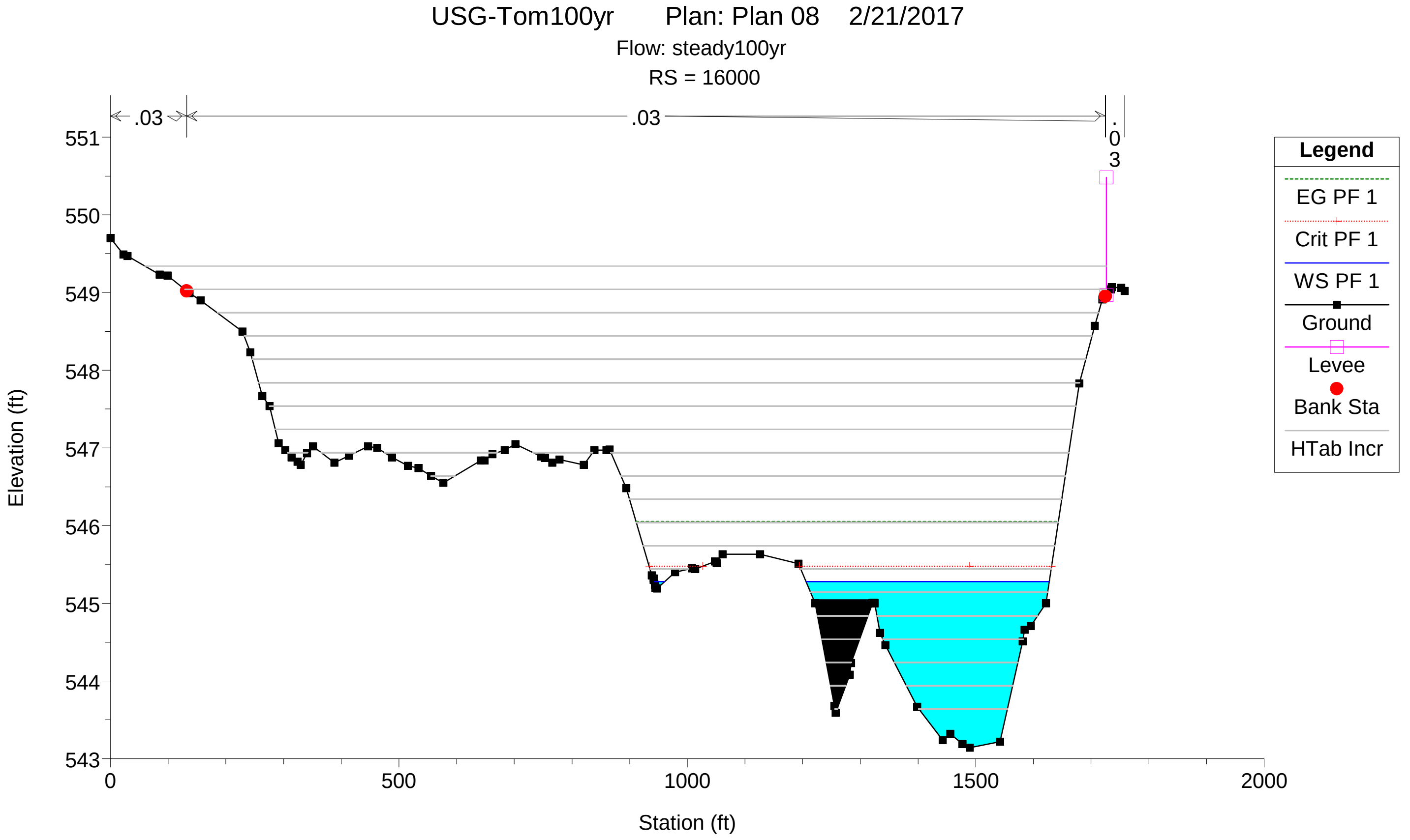

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 18500
.03
.03
.03
623
622
621
620
619
618
617
616
Elevation (ft)
600
800
1000
1200
1400
1600
1800
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

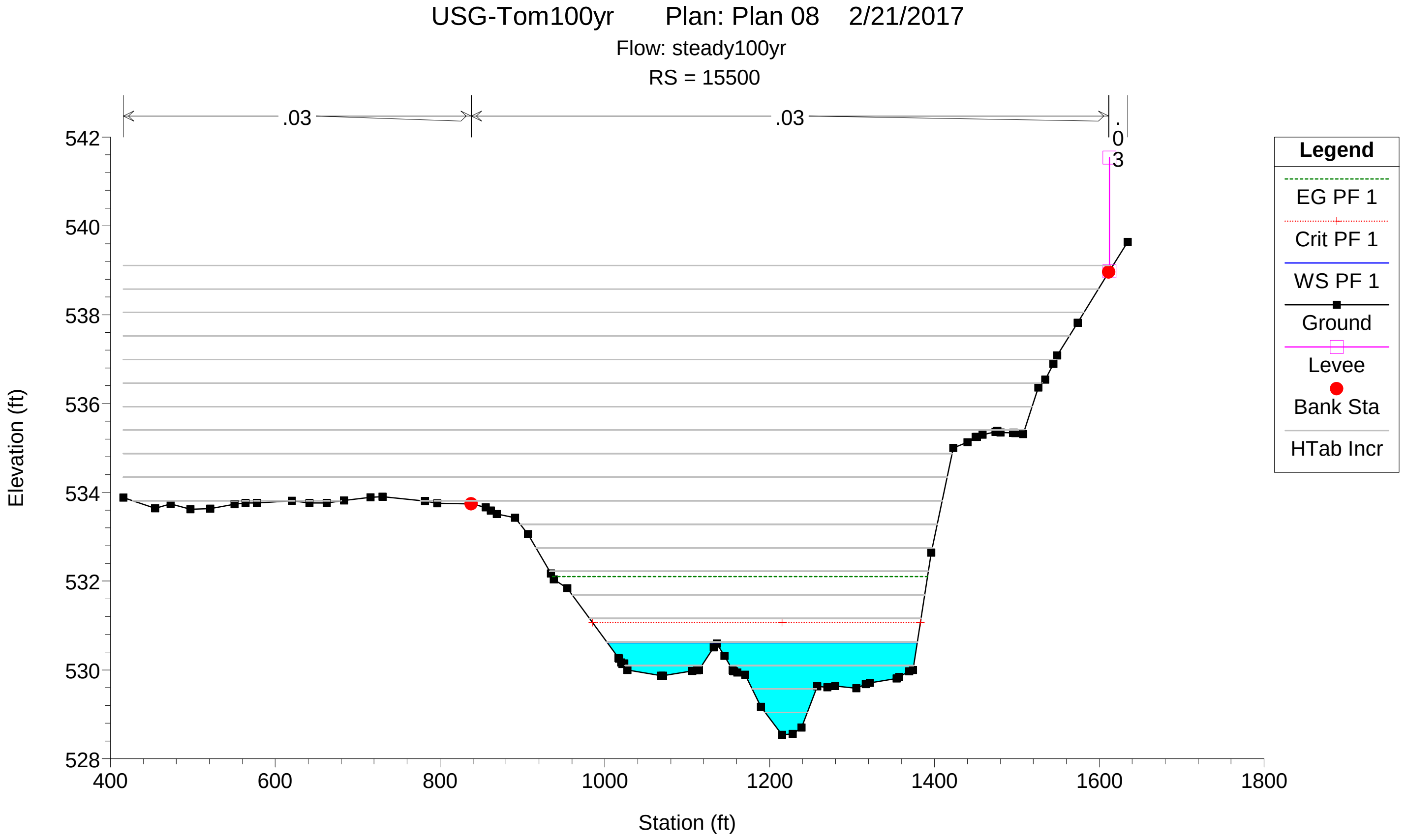

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 18000
.03
.03
606
605
604
603
602
601
600
Elevation (ft)
400
600
800
1000
1200
1400
1600
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

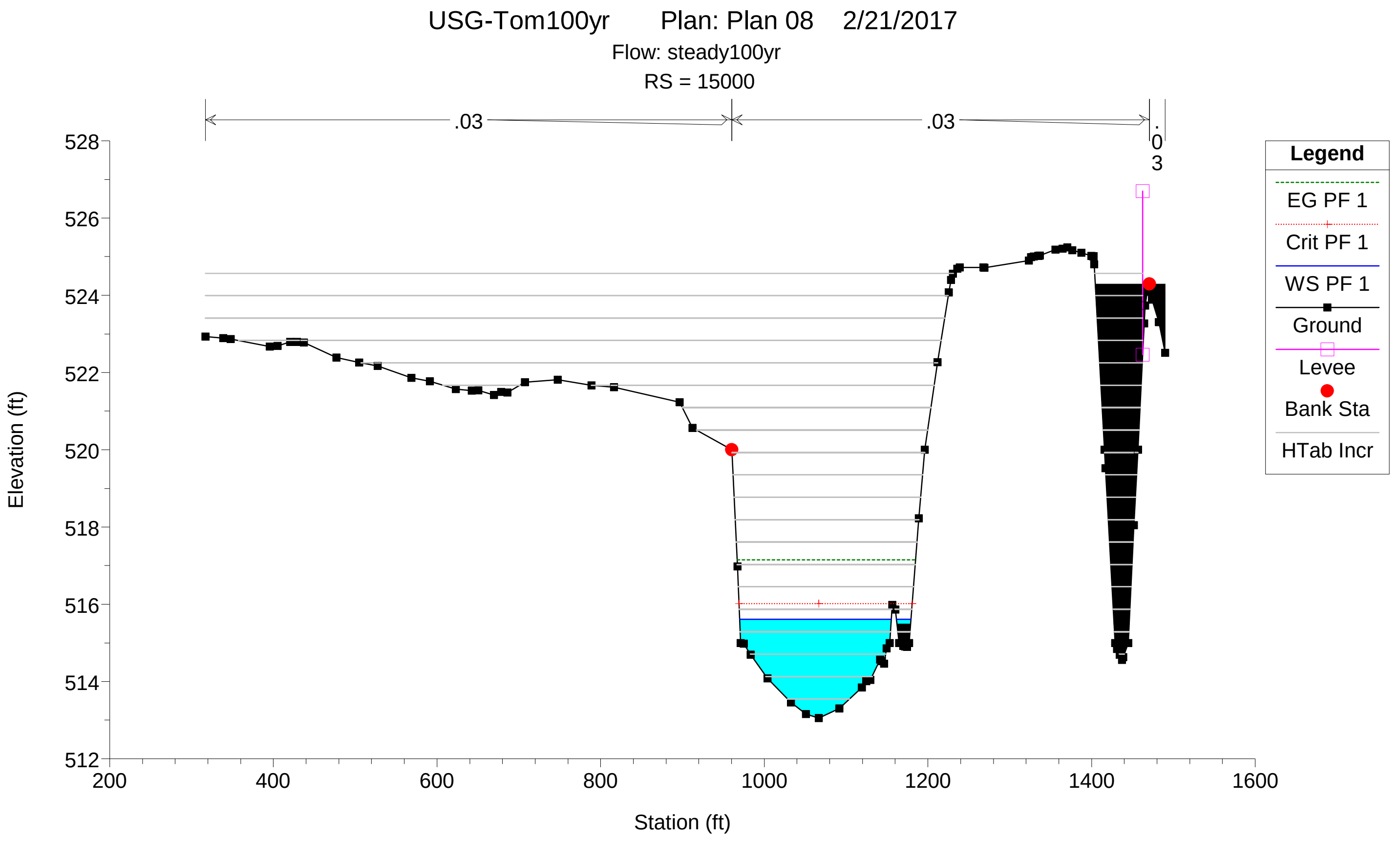

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 17500
.03
.03
.03
589.5
589.0
588.5
588.0
587.5
587.0
586.5
586.0
585.5
Elevation (ft)
600
800
1000
1200
1400
1600
1800
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

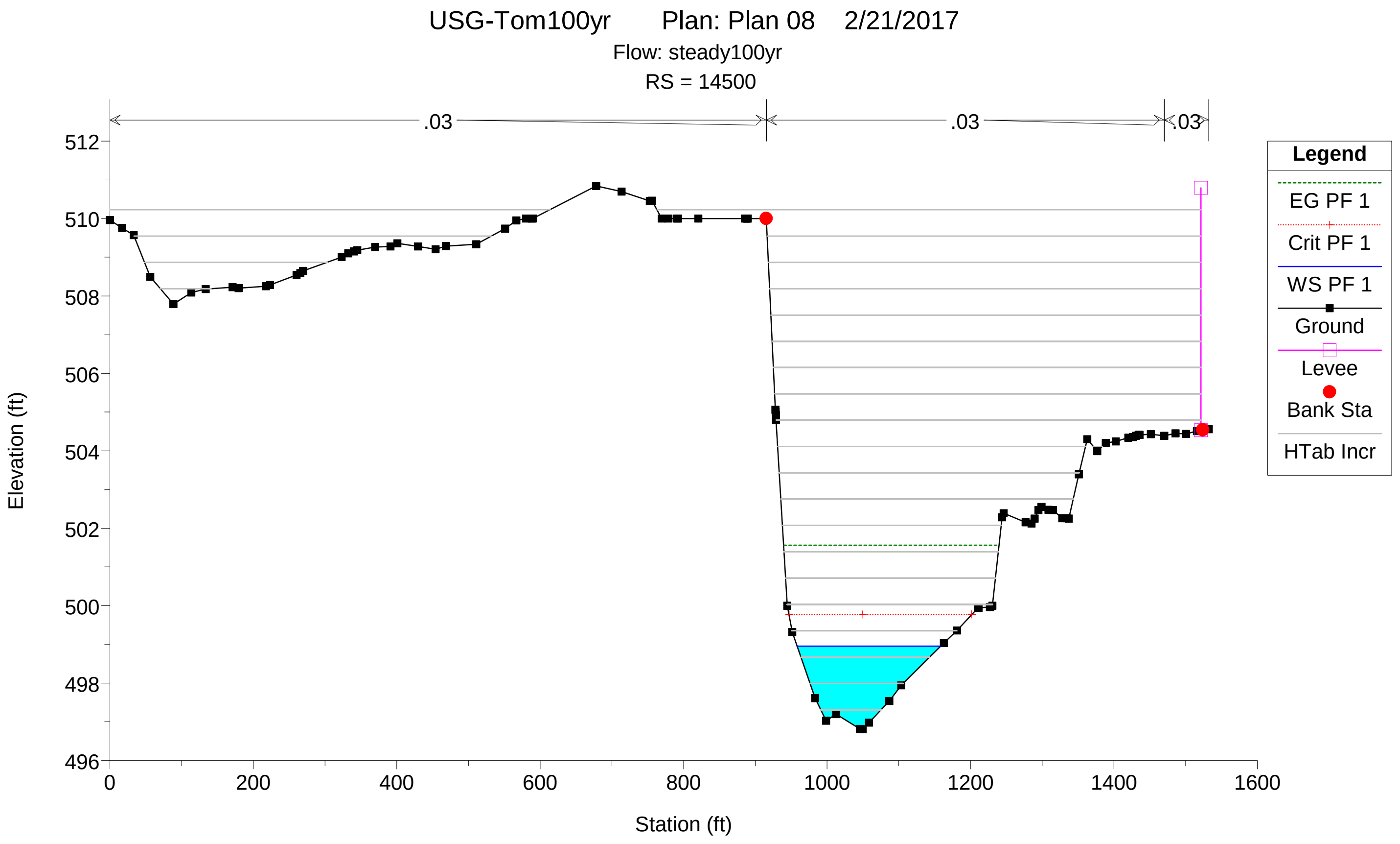

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 17000

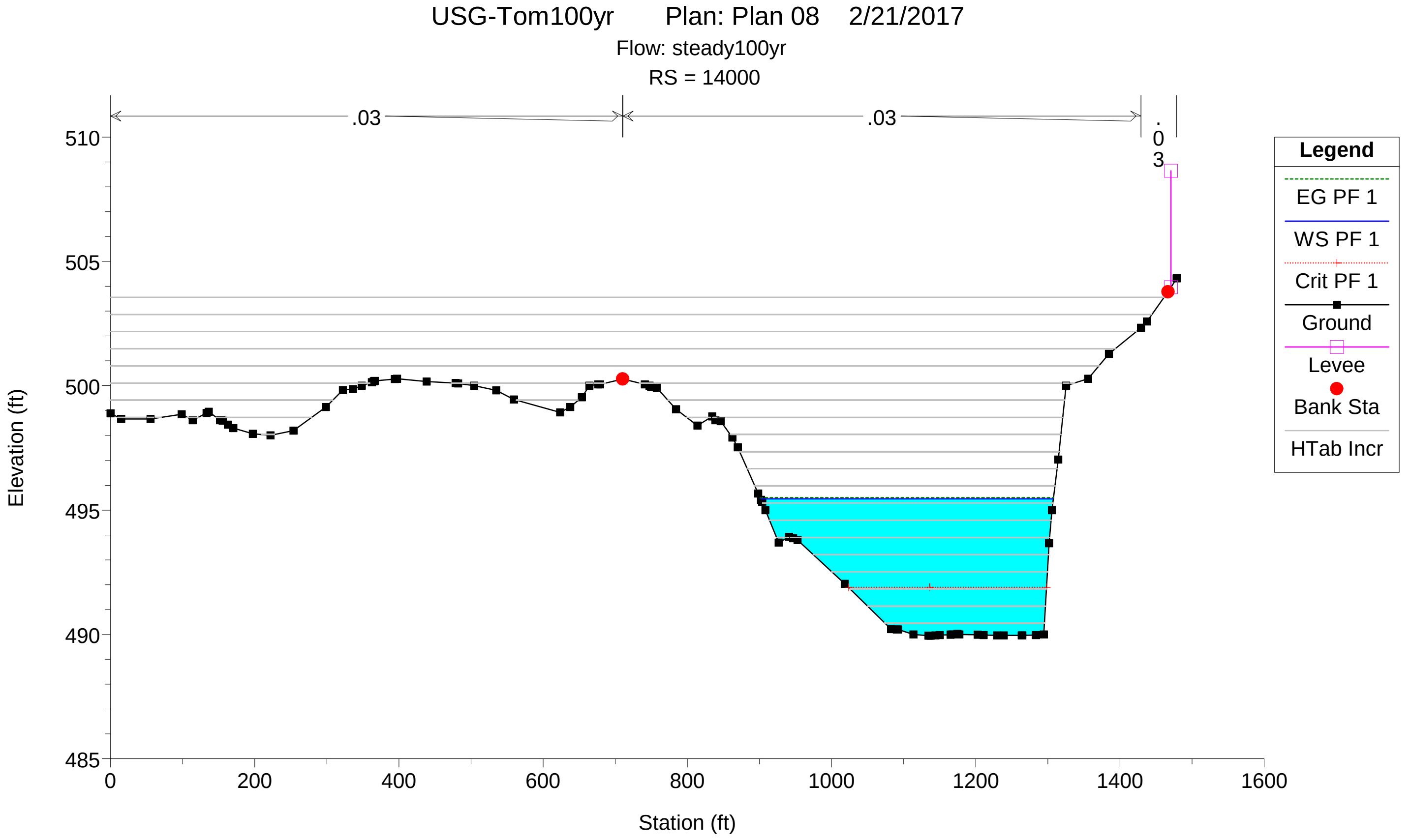

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 16500

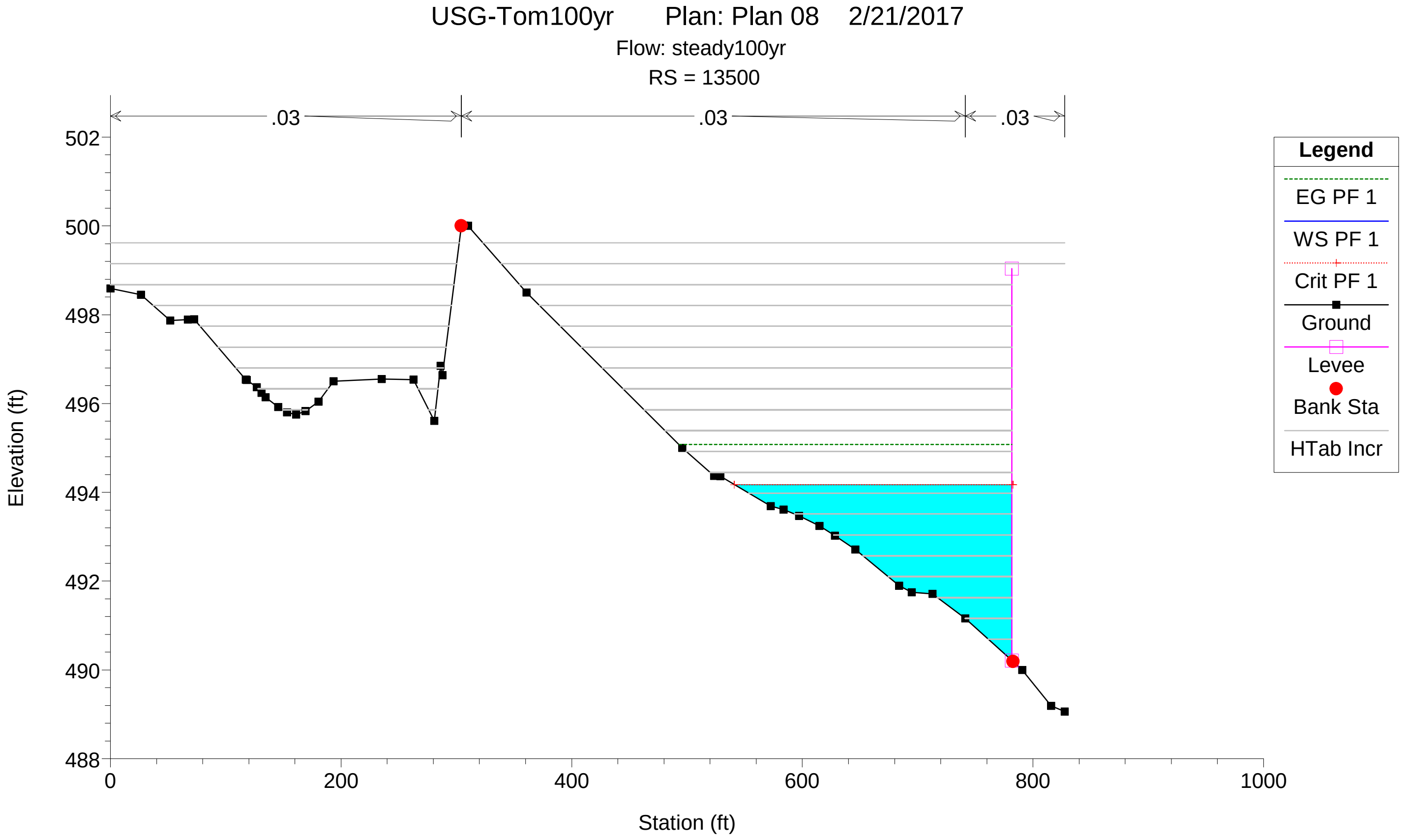

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 16000

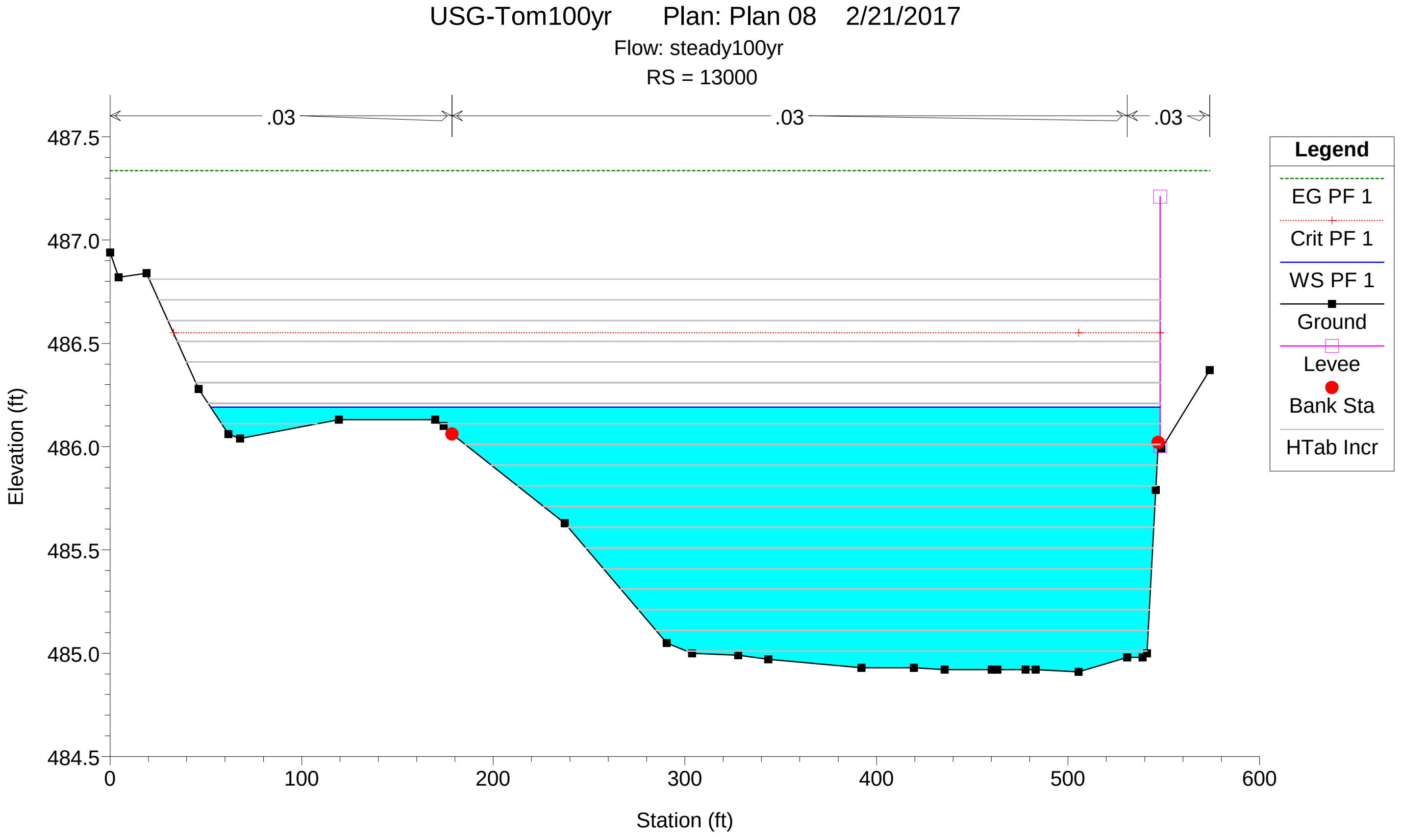

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 15500

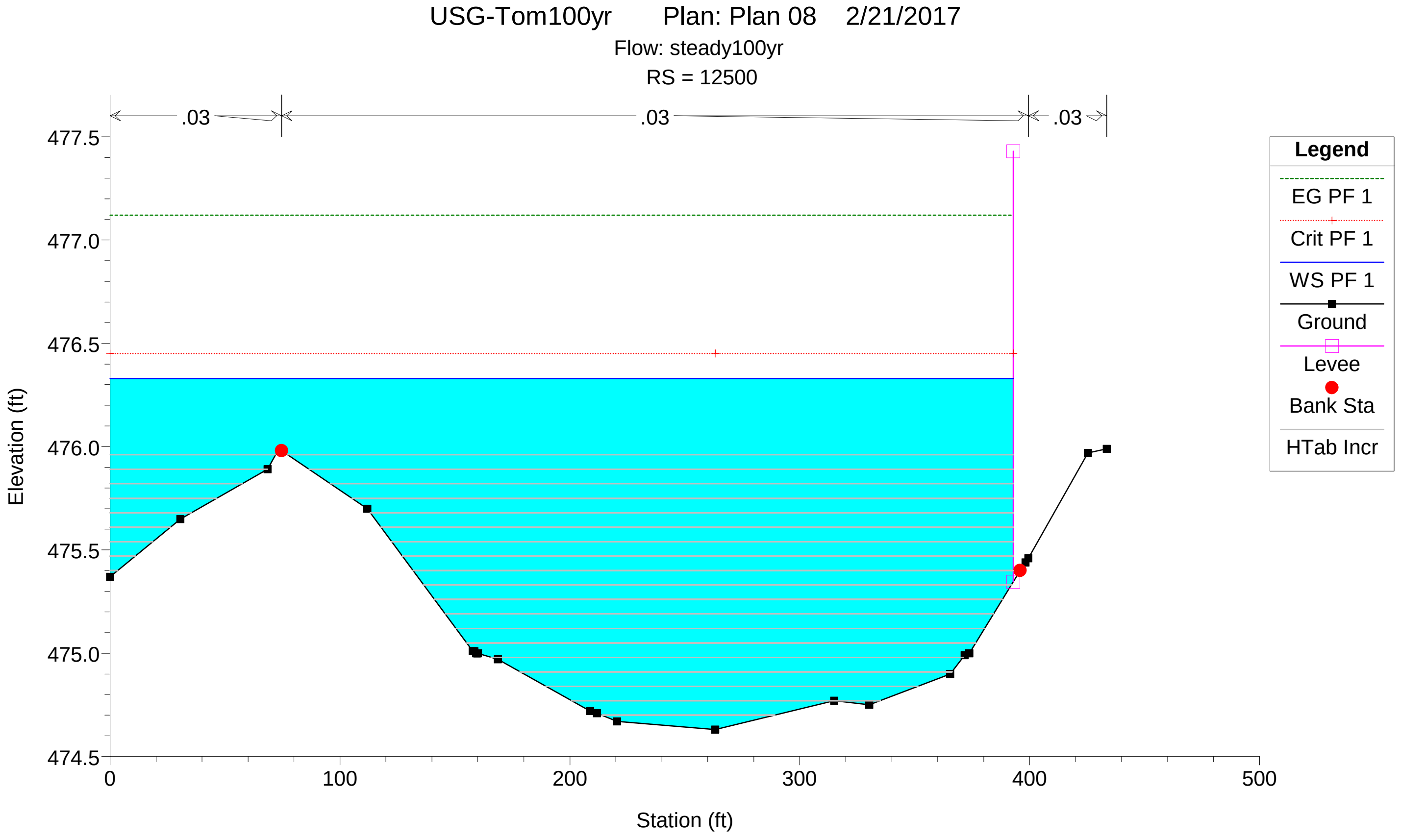

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 15000
.03
.03
.0
3
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
528
526
524
522
520
518
516
514
512
Station (ft)
200
400
600
800
1000
1200
1400
1600

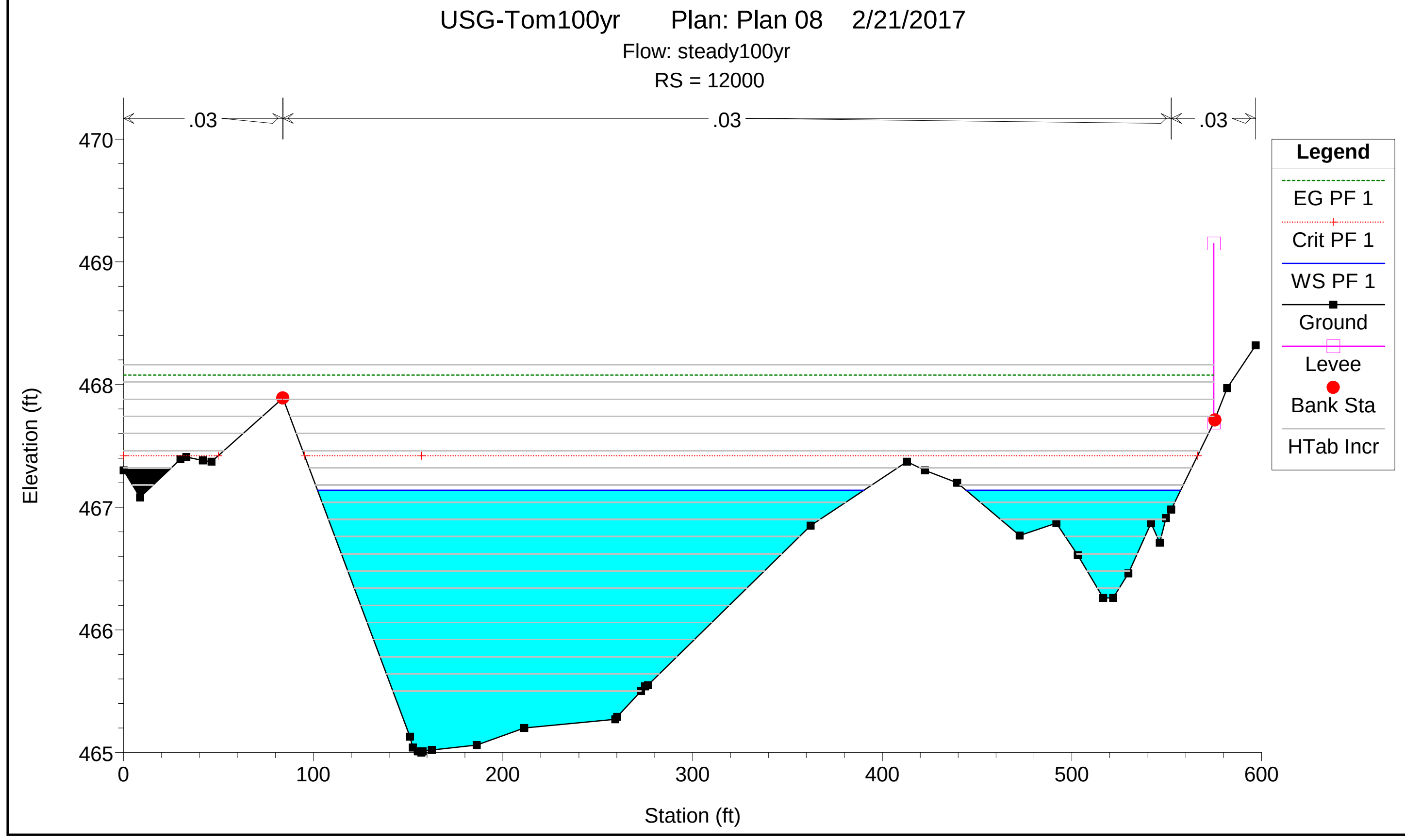

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 14500
.03
.03
.03
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
512
510
508
506
504
502
500
498
496
Station (ft)
0
200
400
600
800
1000
1200
1400
1600

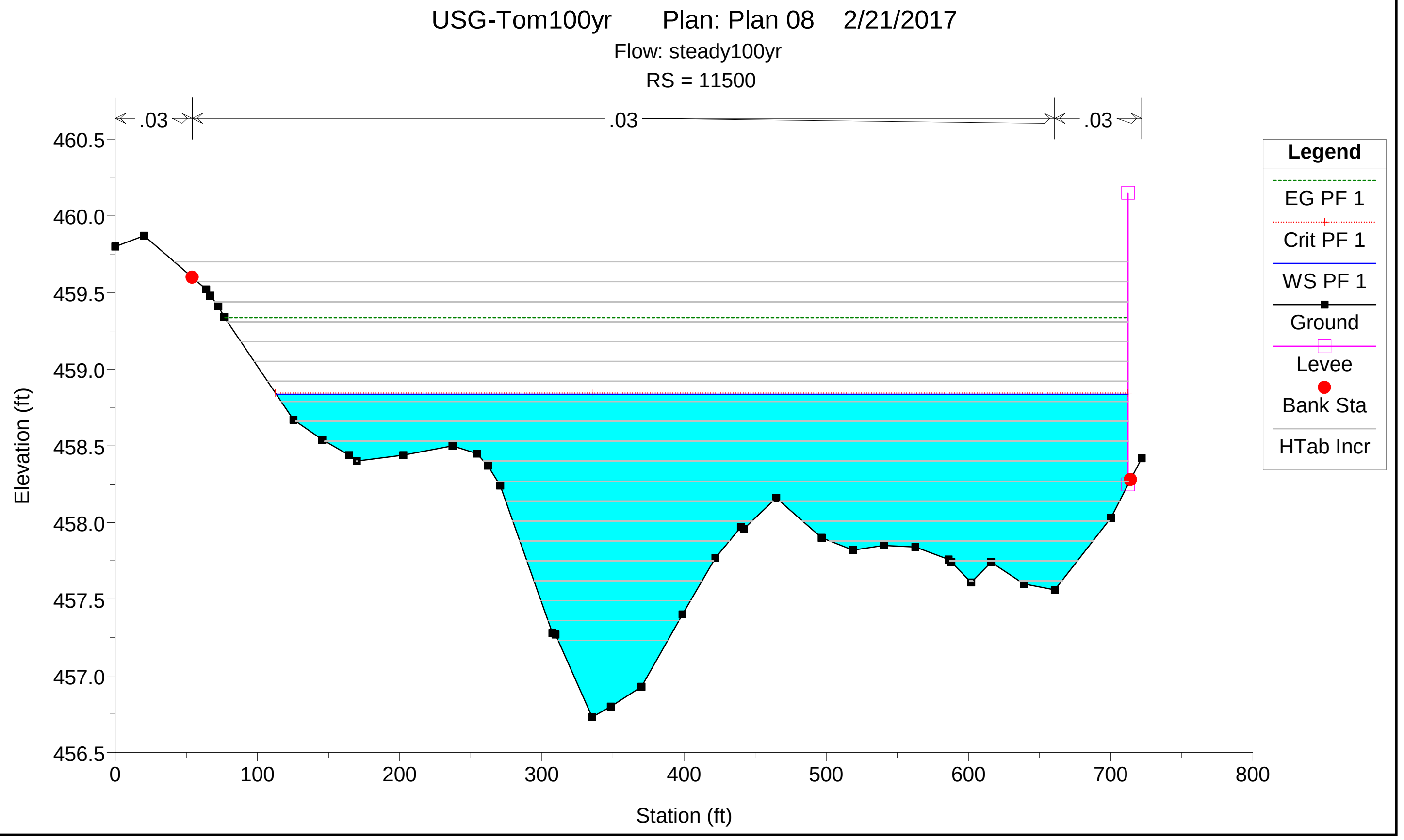

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 14000
.03
.03
.0
3
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
510
505
500
495
490
485
Station (ft)
0
200
400
600
800
1000
1200
1400
1600


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 13500
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
502
500
498
496
494
492
490
488
Station (ft)
0
200
400
600
800
1000

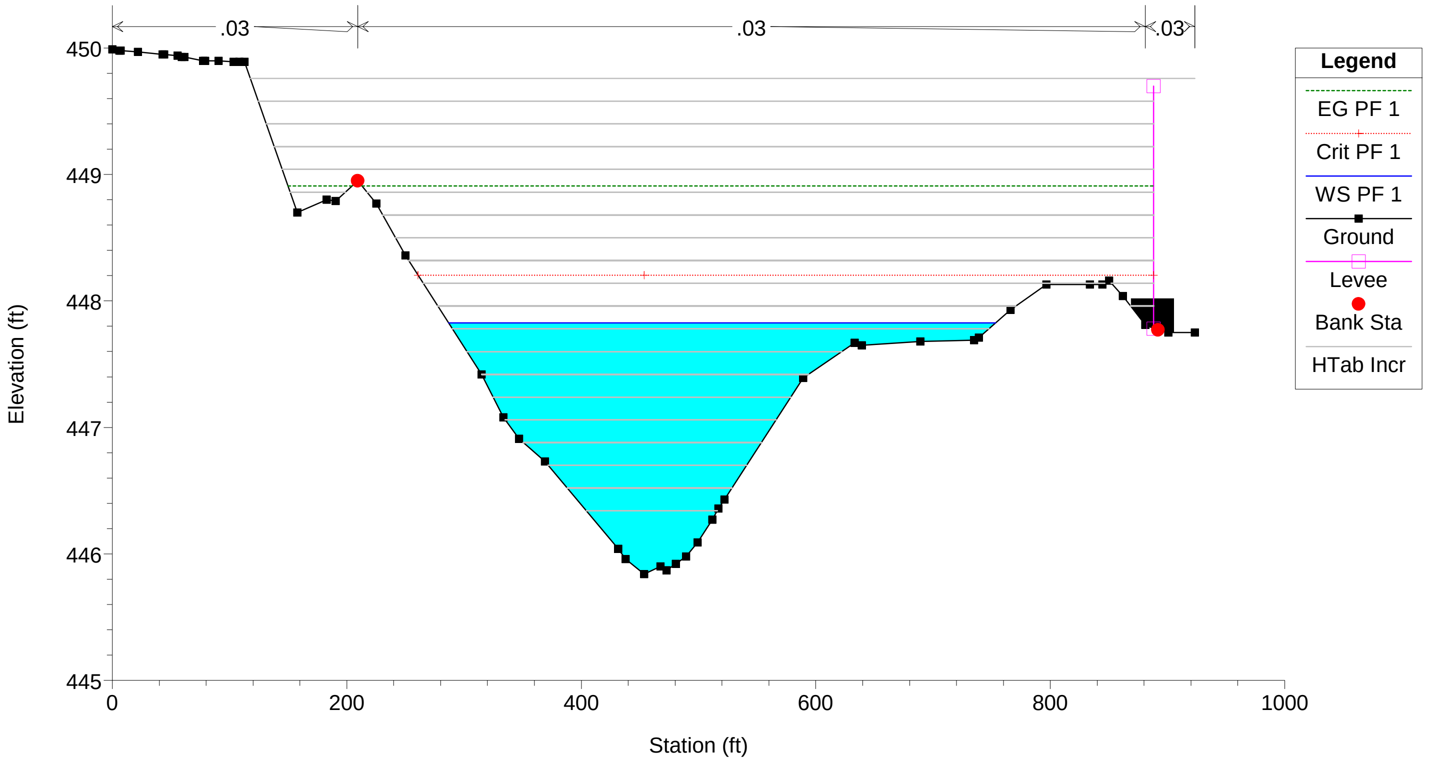

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 13000


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 12500

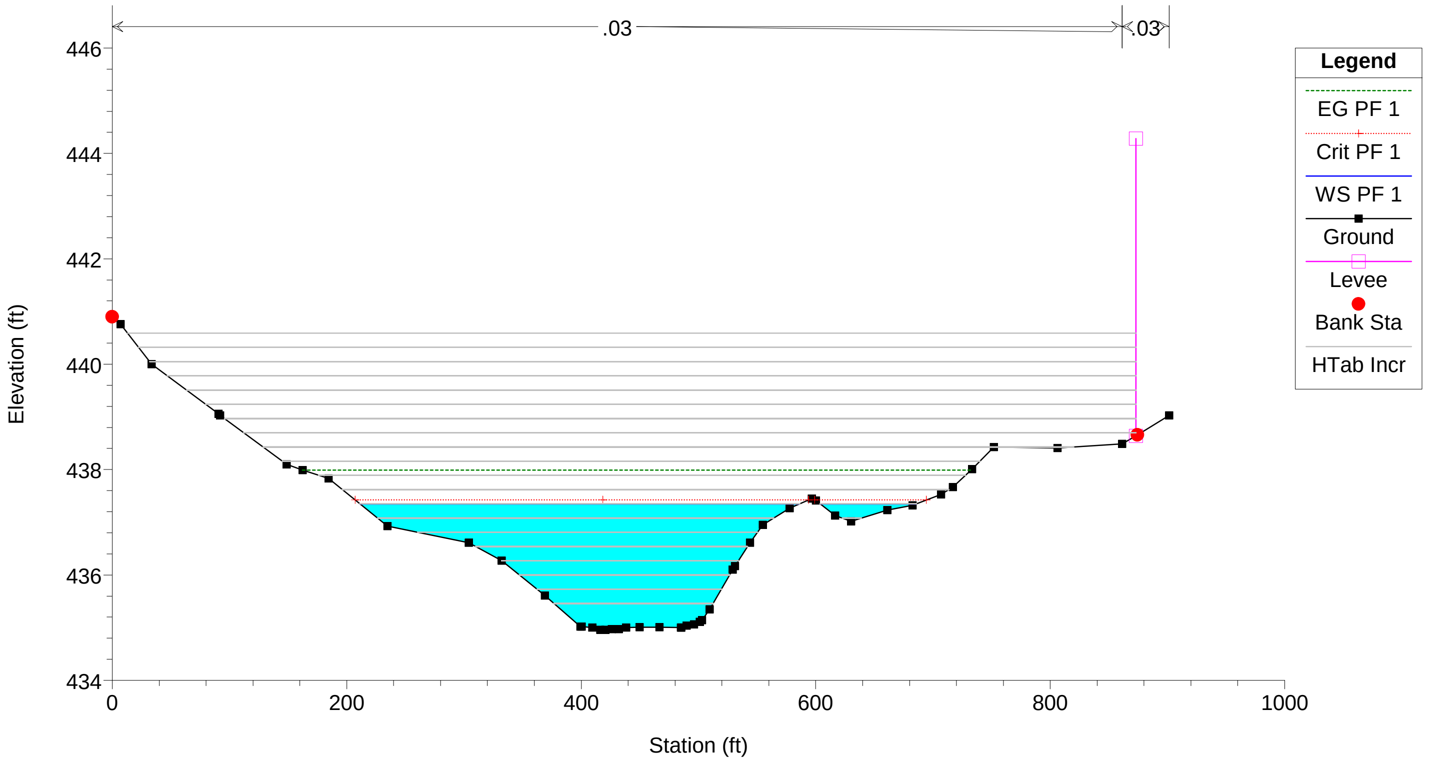

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 12000


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 11500

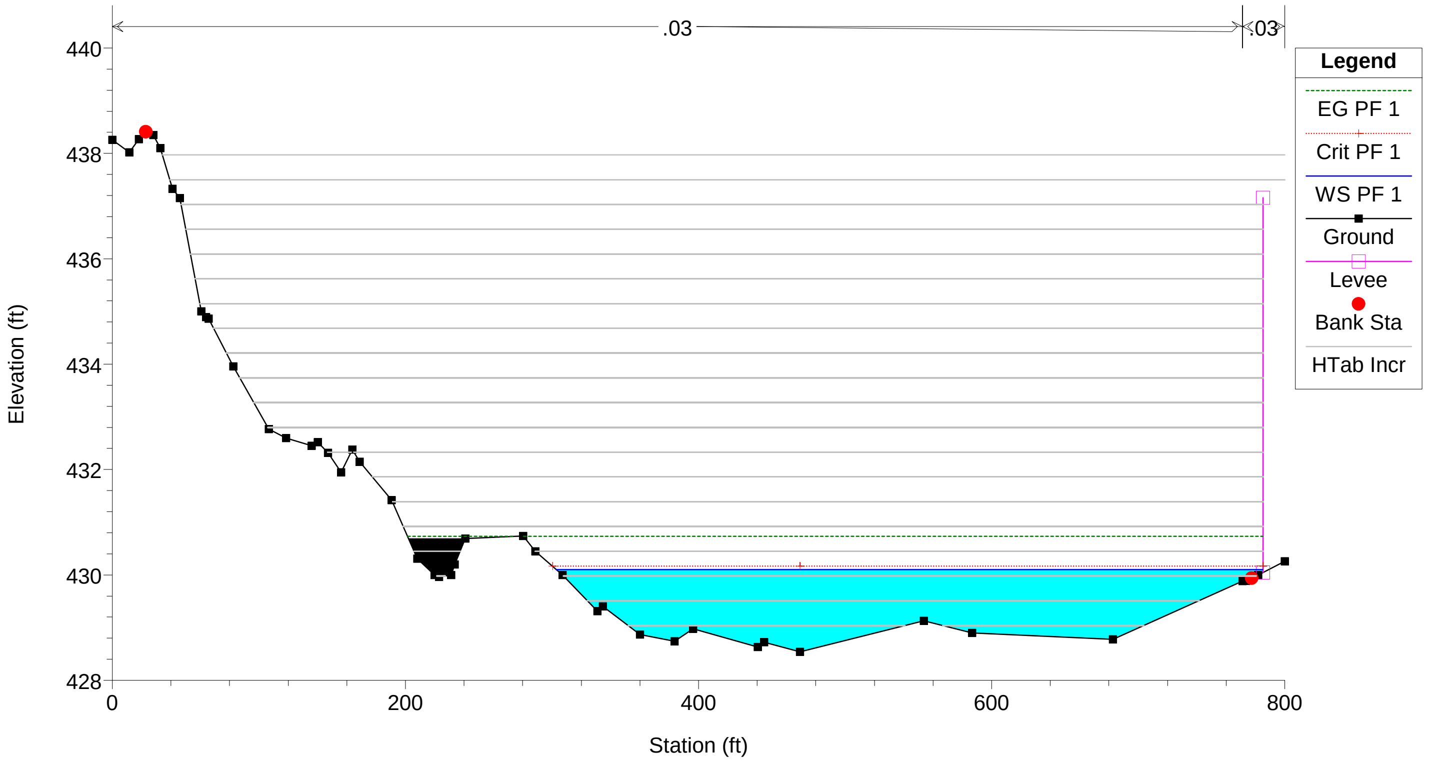
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 11000



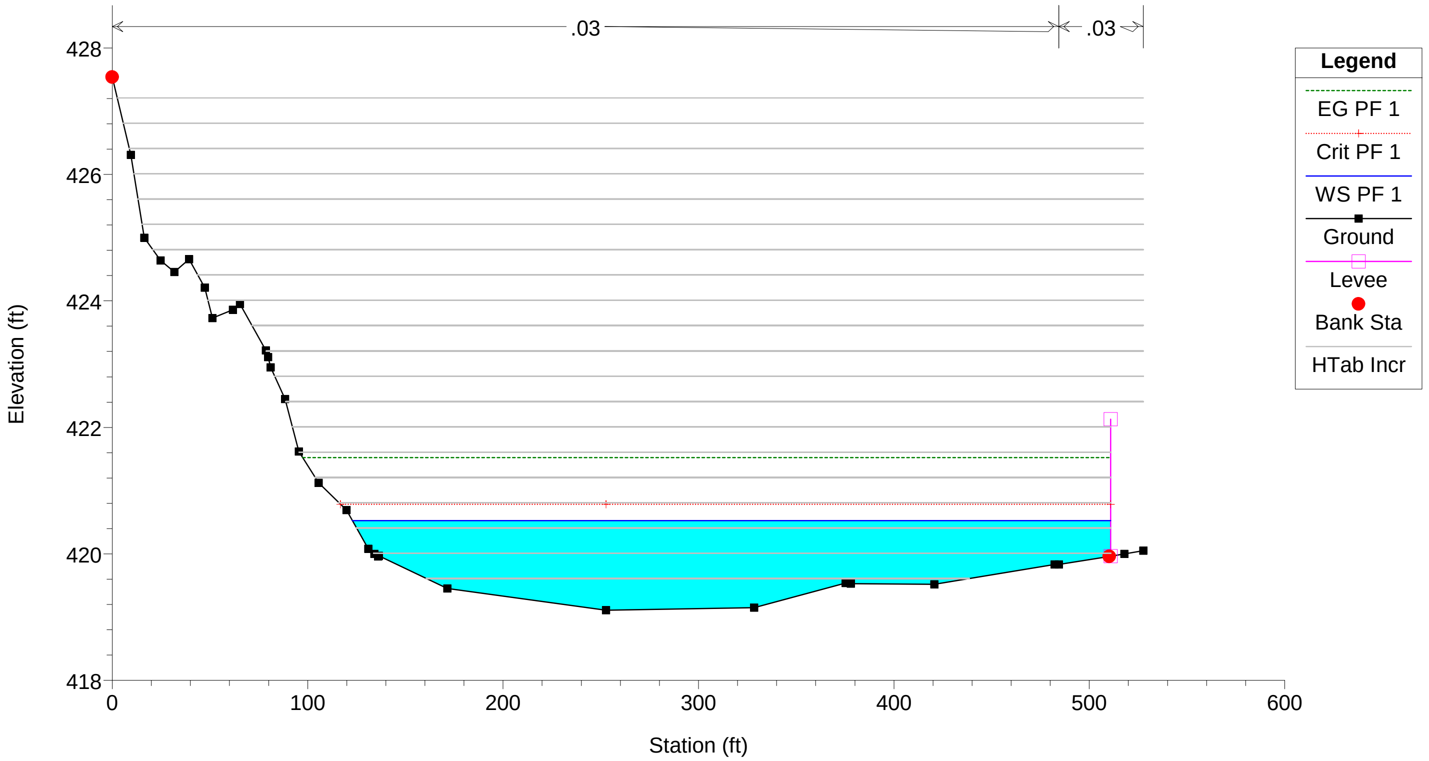
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 10500

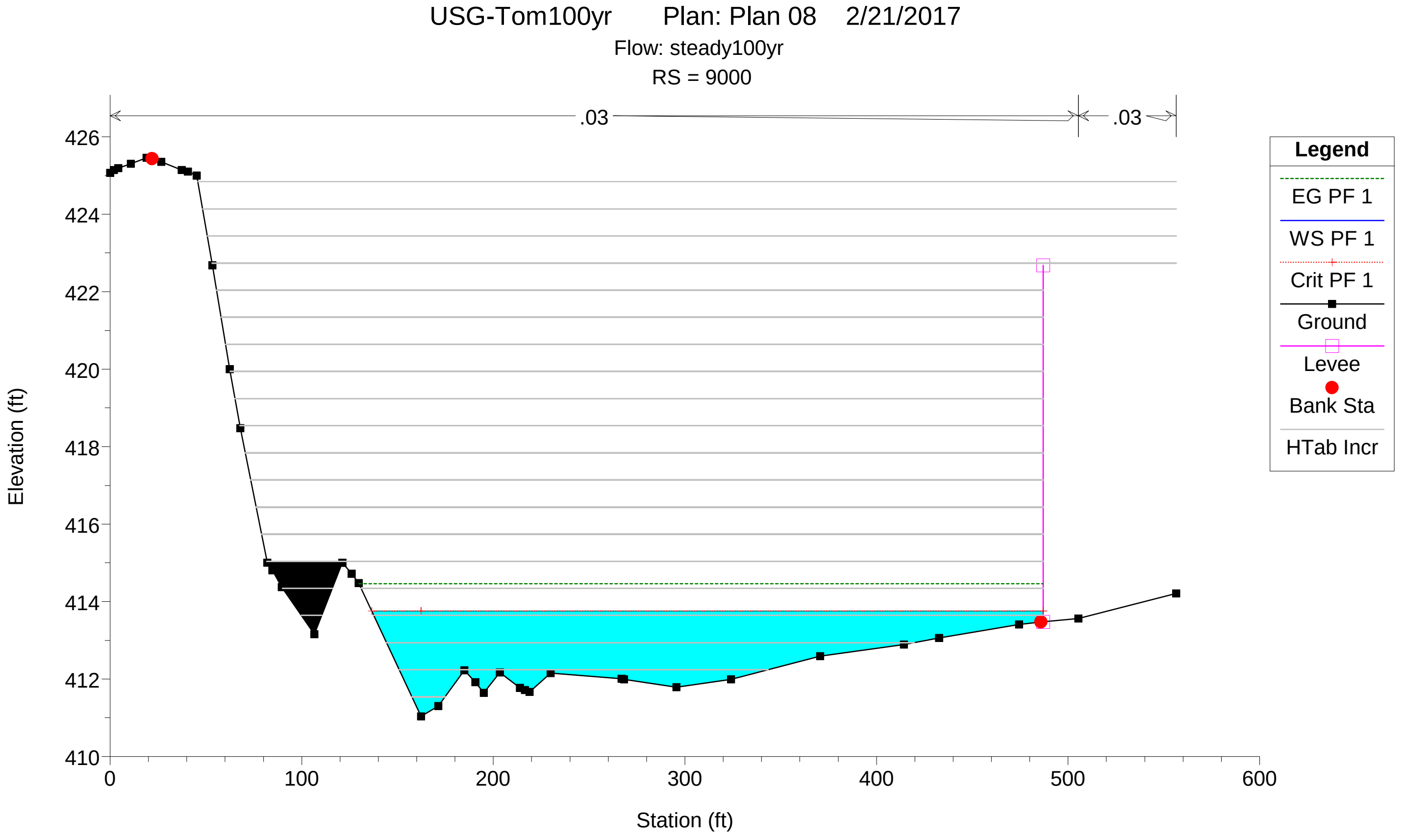


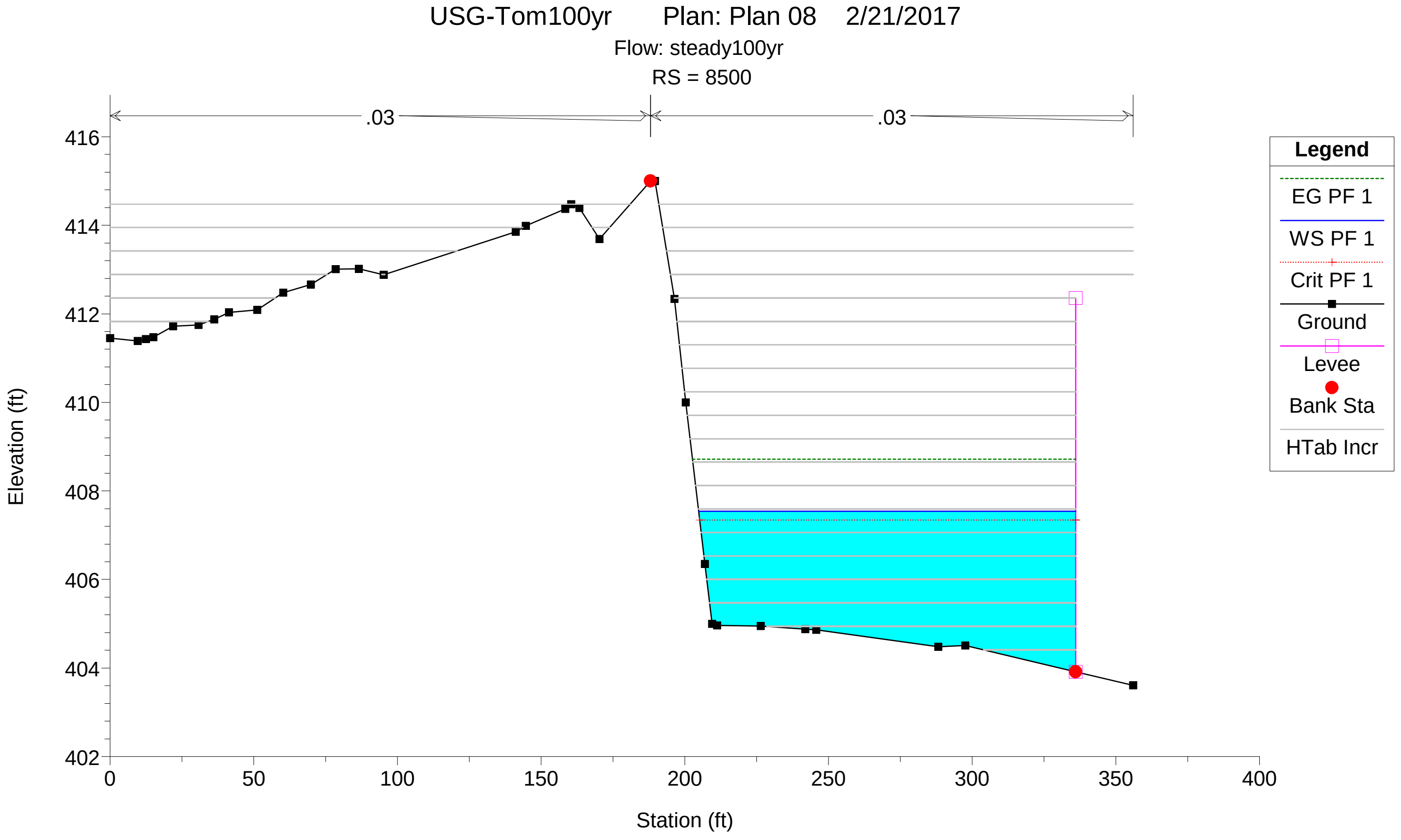
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 10000

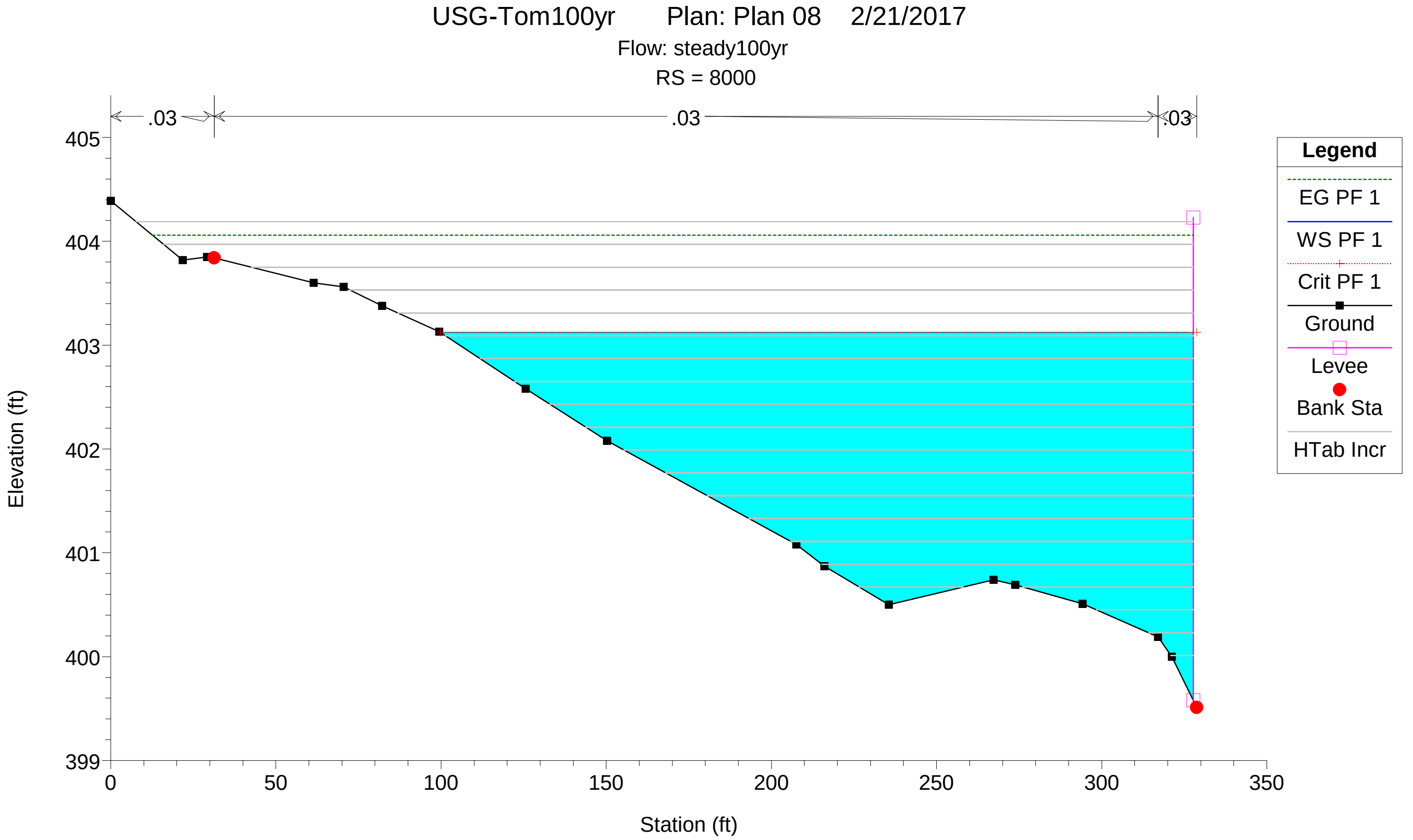


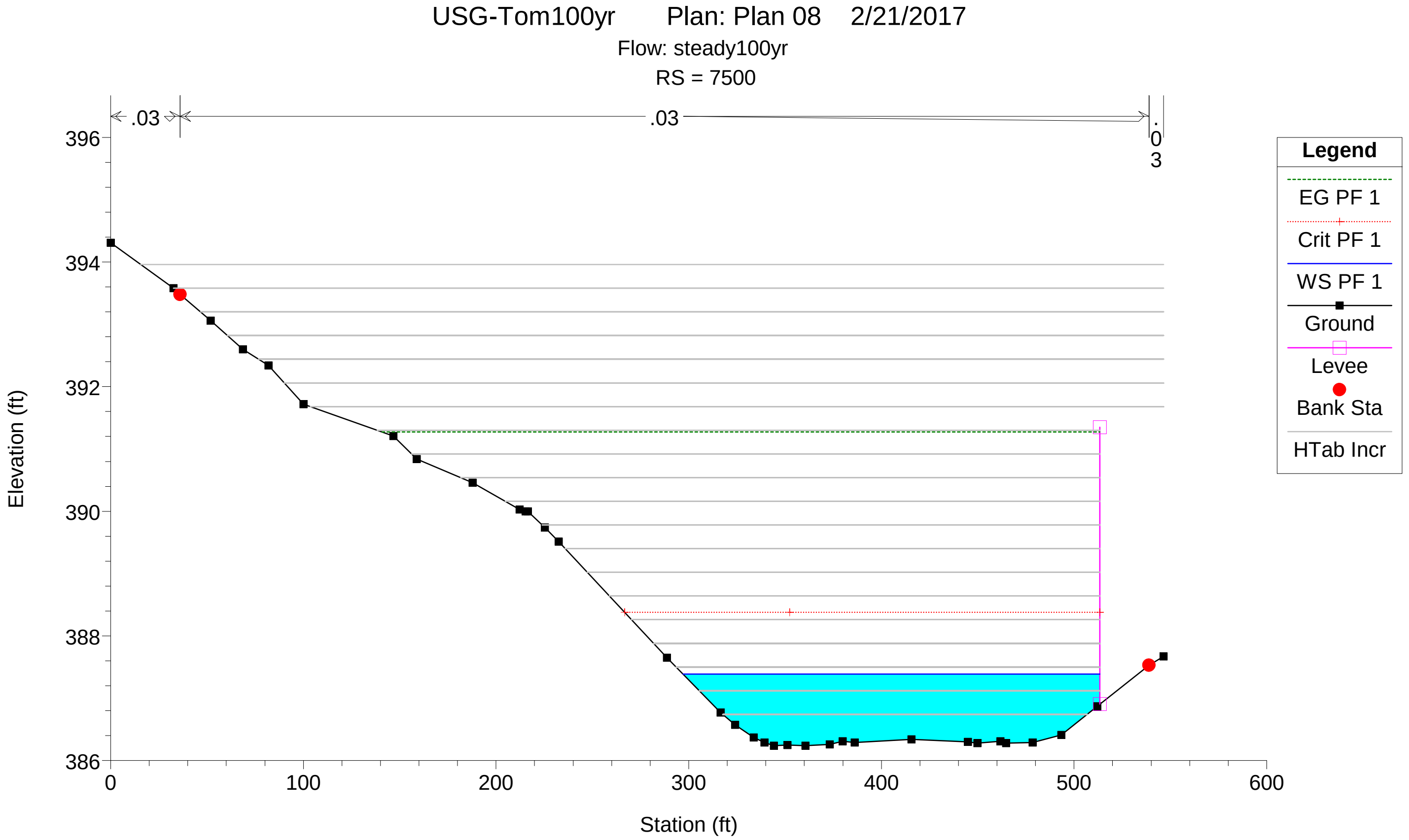
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 9500

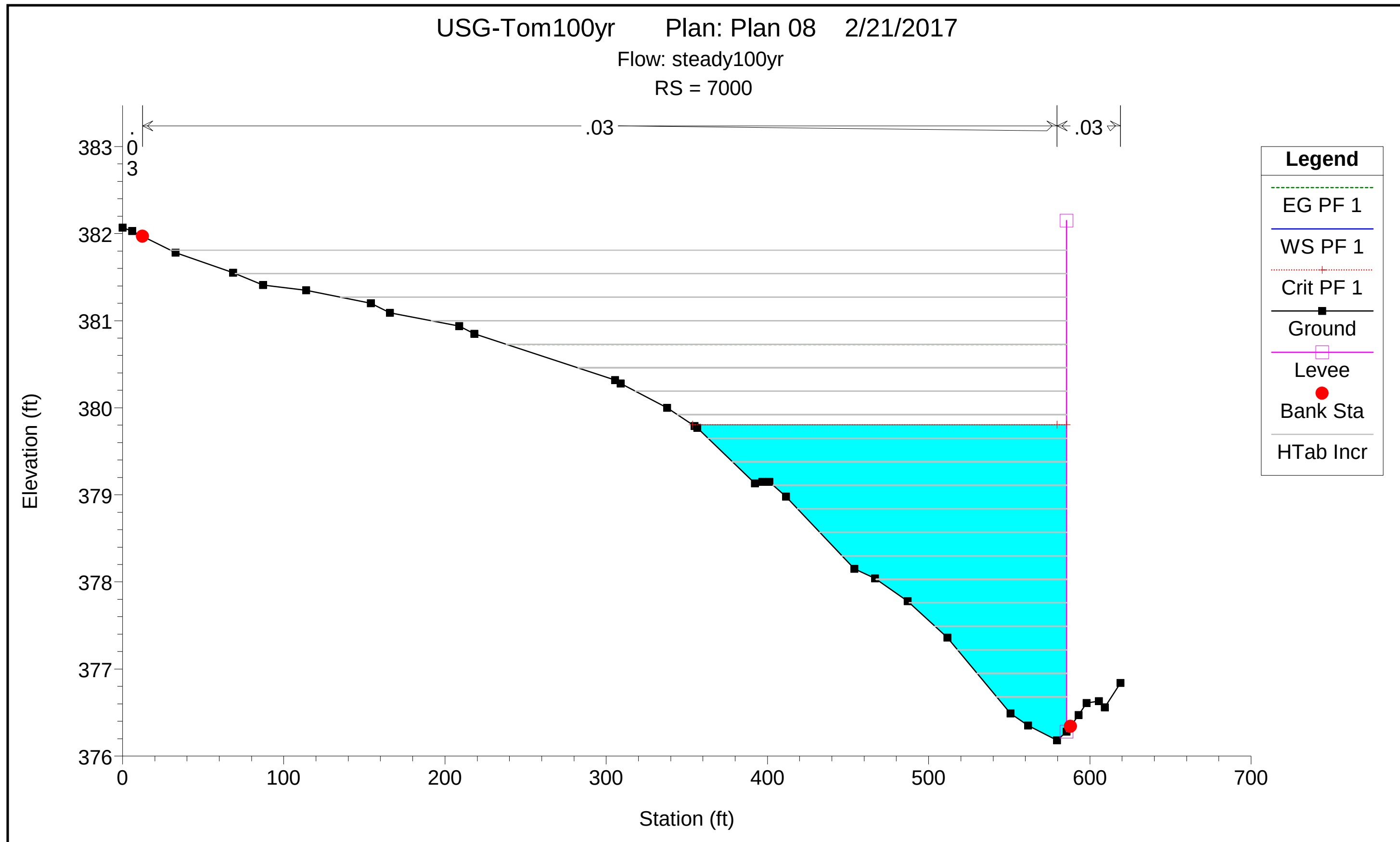



USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 9000
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
410
412
414
416
418
420
422
424
426
Station (ft)
0
100
200
300
400
500
600

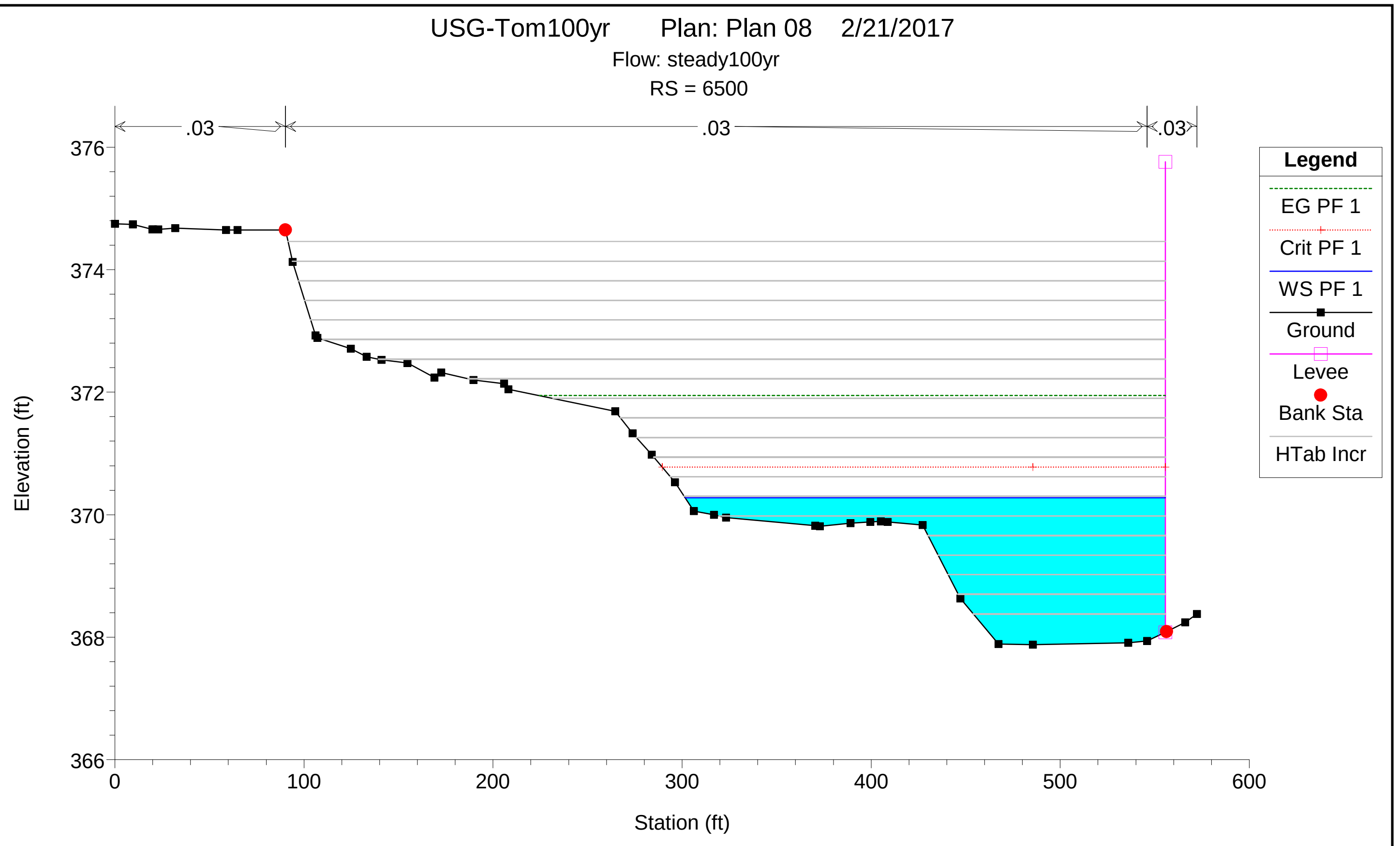

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 8500
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
402
404
406
408
410
412
414
416
Station (ft)
0
50
100
150
200
250
300
350
400


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 8000
.03
.03
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
399
400
401
402
403
404
405
Station (ft)
0
50
100
150
200
250
300
350

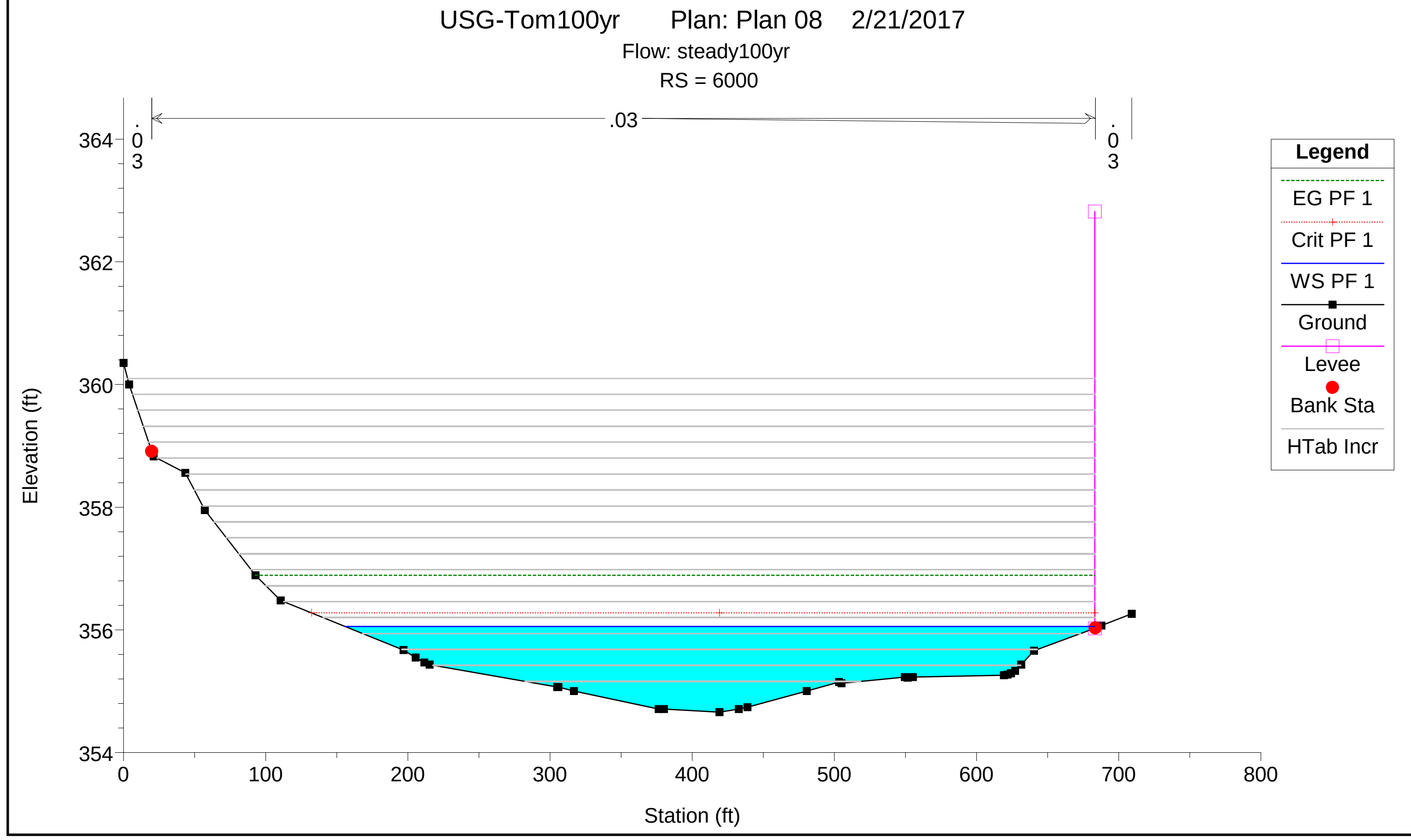

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 7500
.03
.03
.0
3
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr
Elevation (ft)
386
388
390
392
394
396
Station (ft)
0
100
200
300
400
500
600



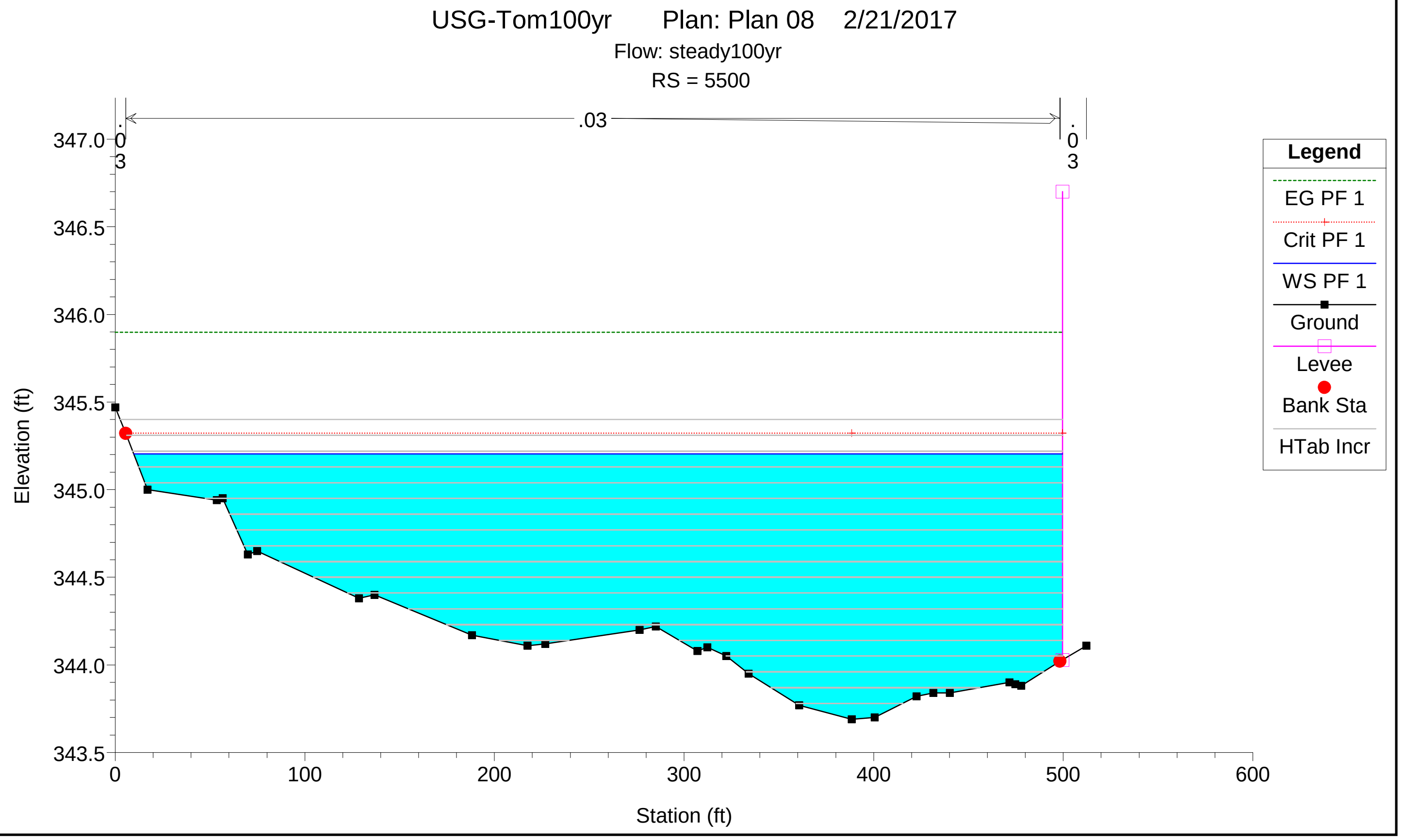
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 7000
.03
.03
.03
Elevation (ft)
383
382
381
380
379
378
377
376
Station (ft)
0
100
200
300
400
500
600
700
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr



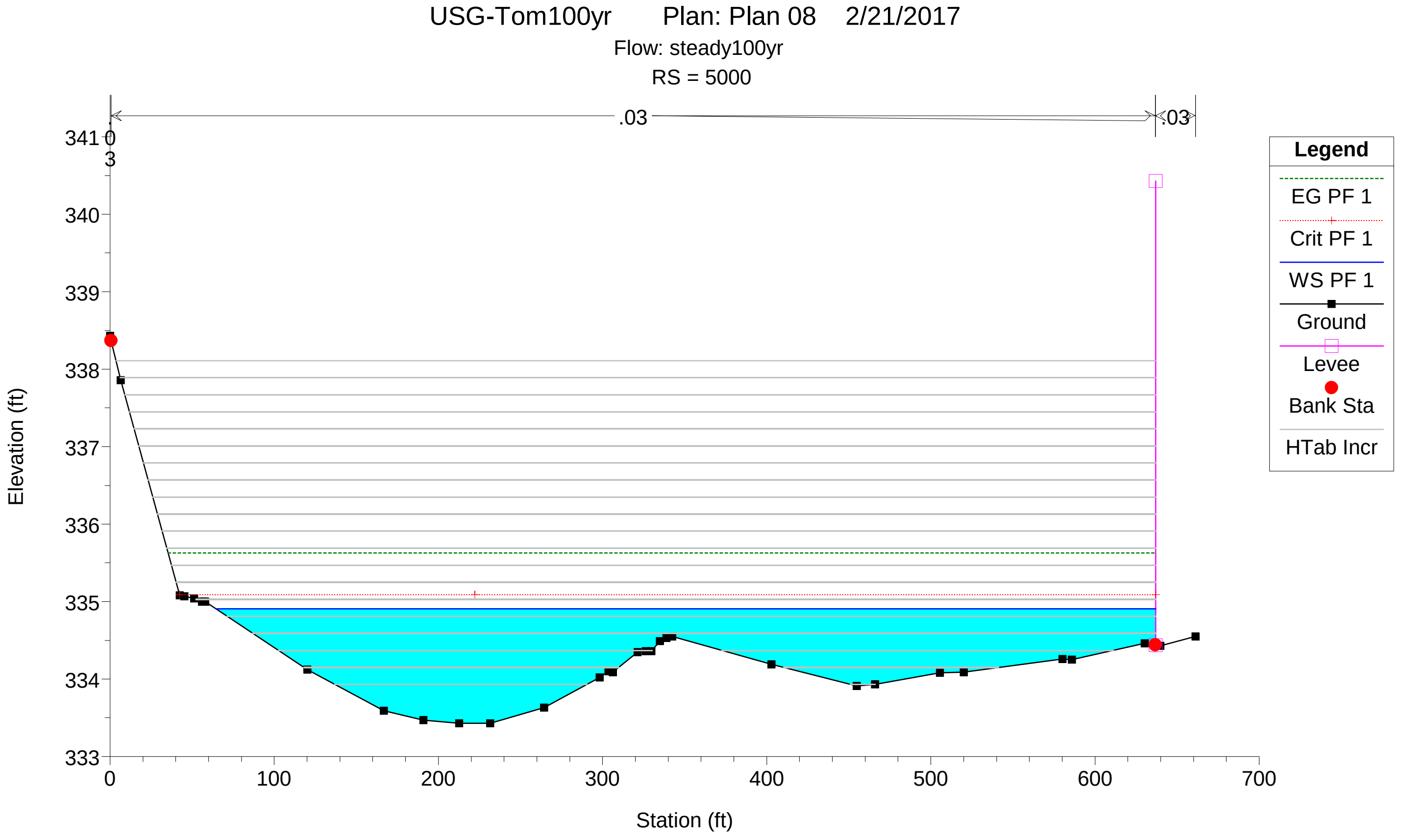
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 6500
.03
.03
.03
Elevation (ft)
376
374
372
370
368
366
Station (ft)
0
100
200
300
400
500
600
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

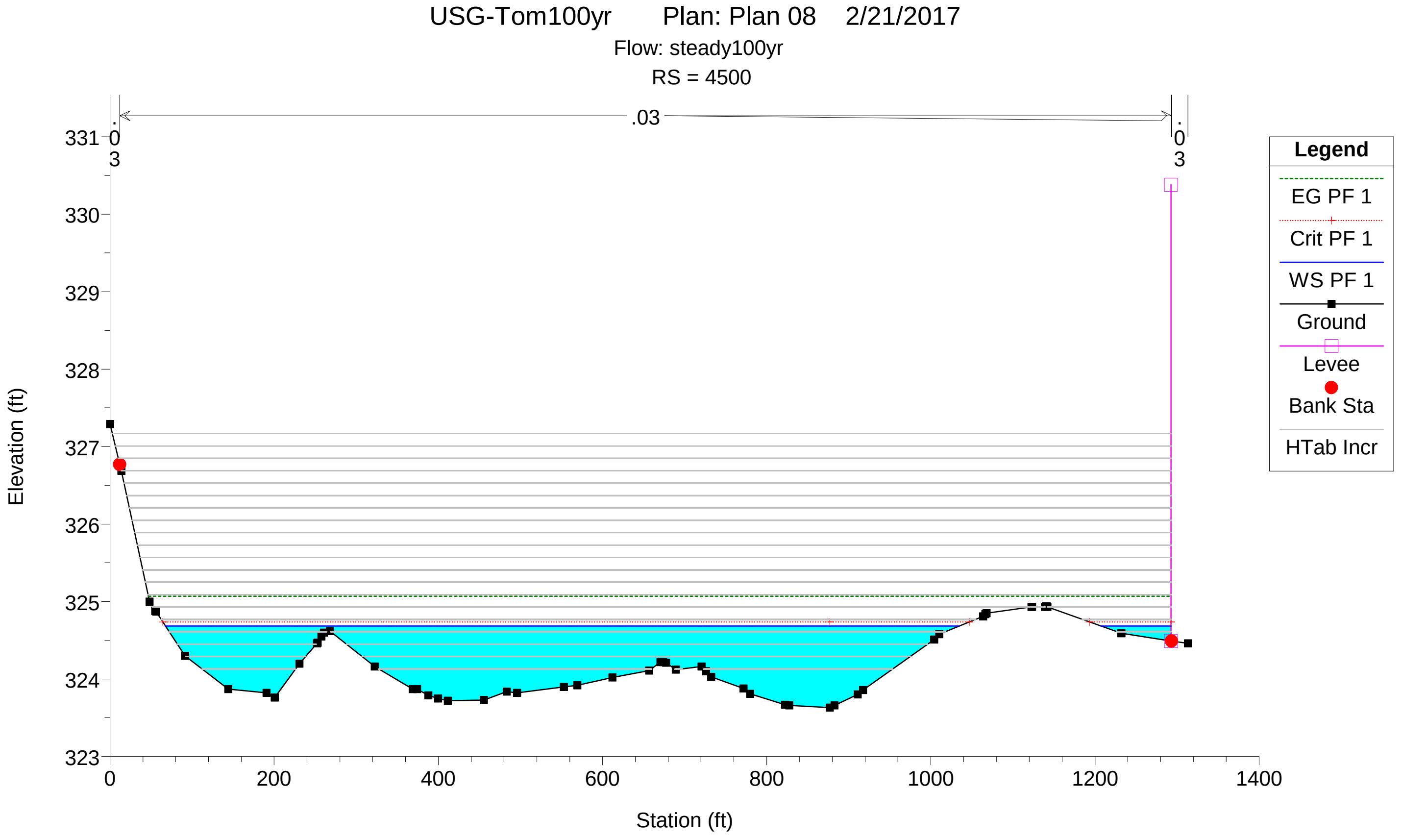


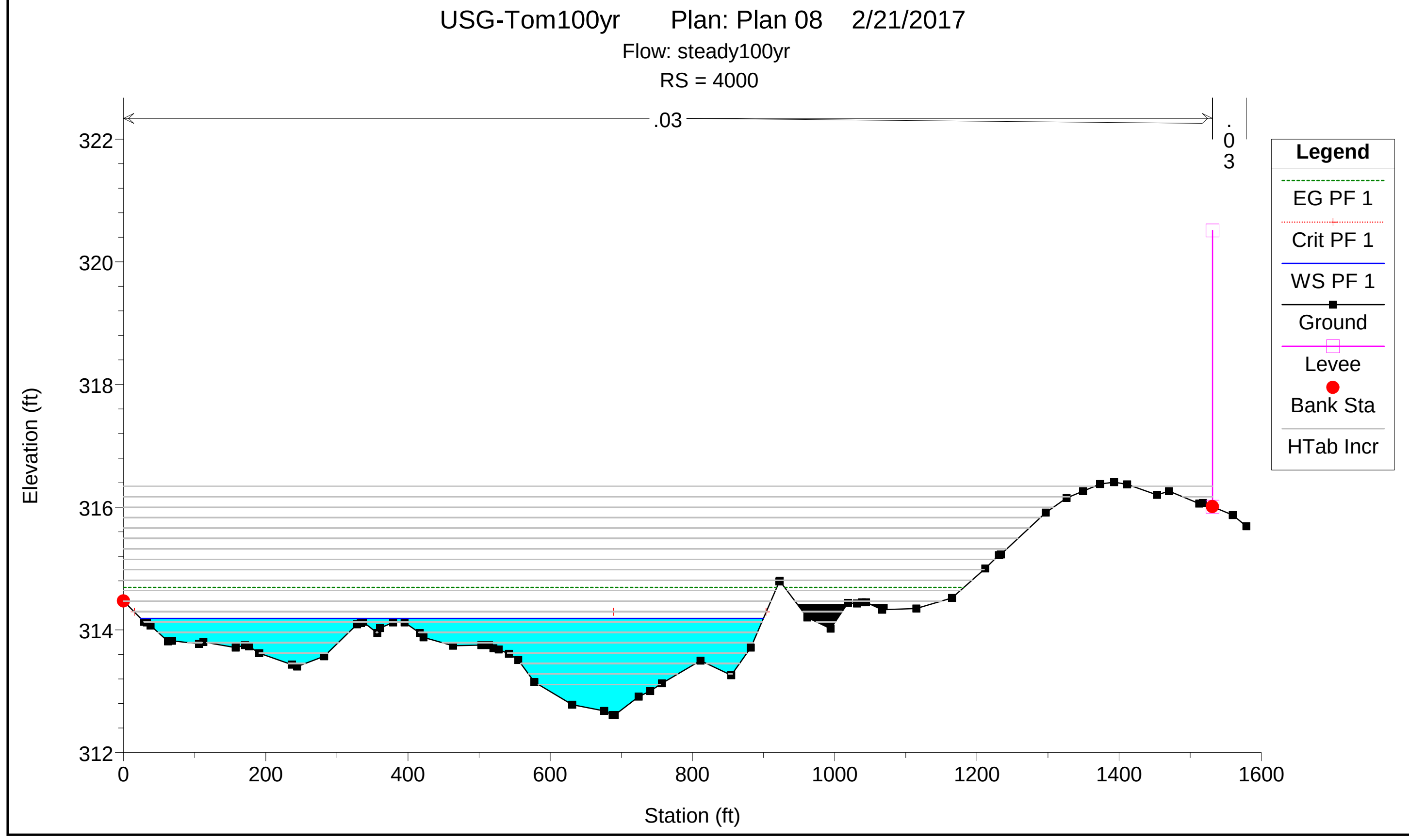
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 6000
.03
.03
.03
Elevation (ft)
364
362
360
358
356
354
Station (ft)
0
100
200
300
400
500
600
700
800
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

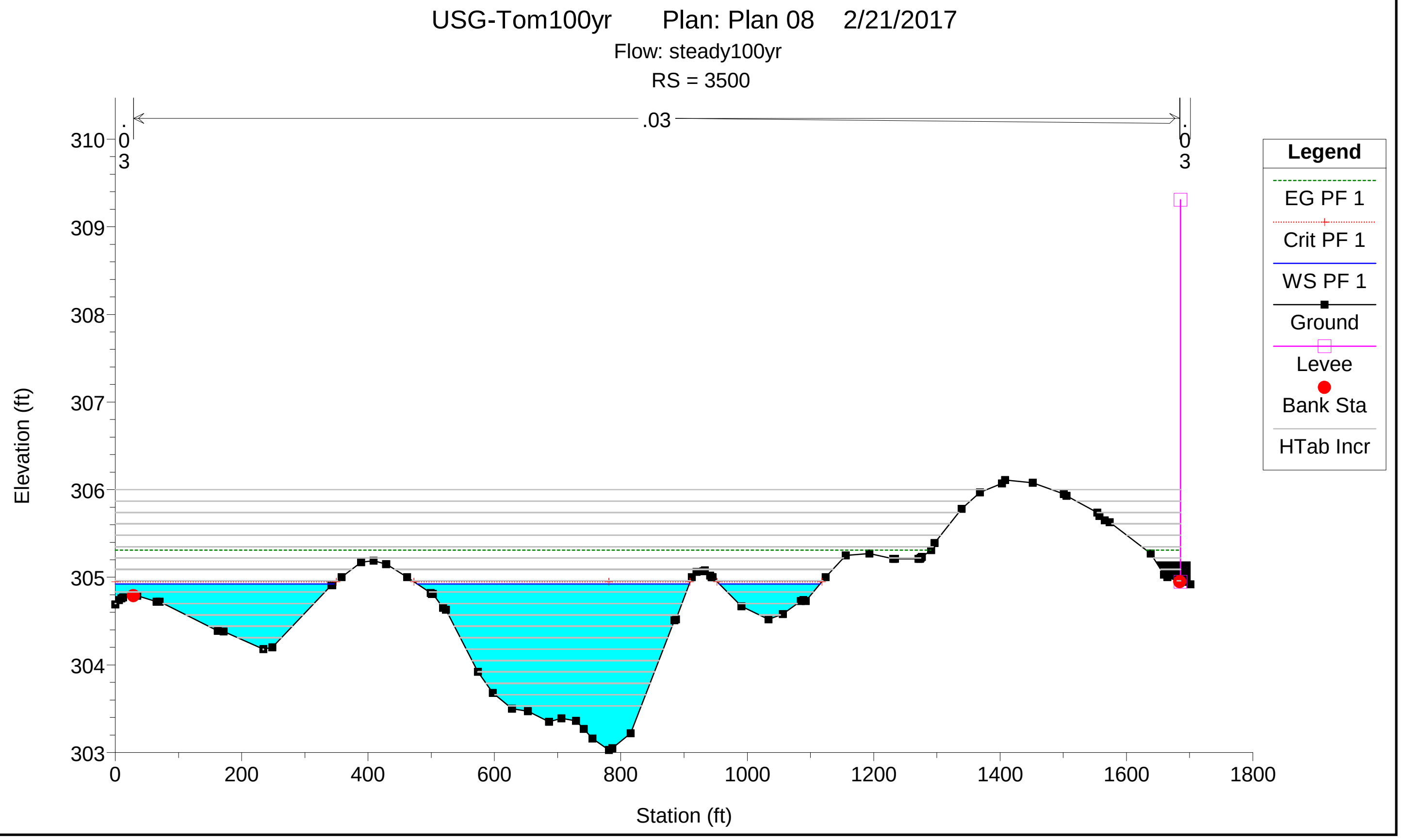


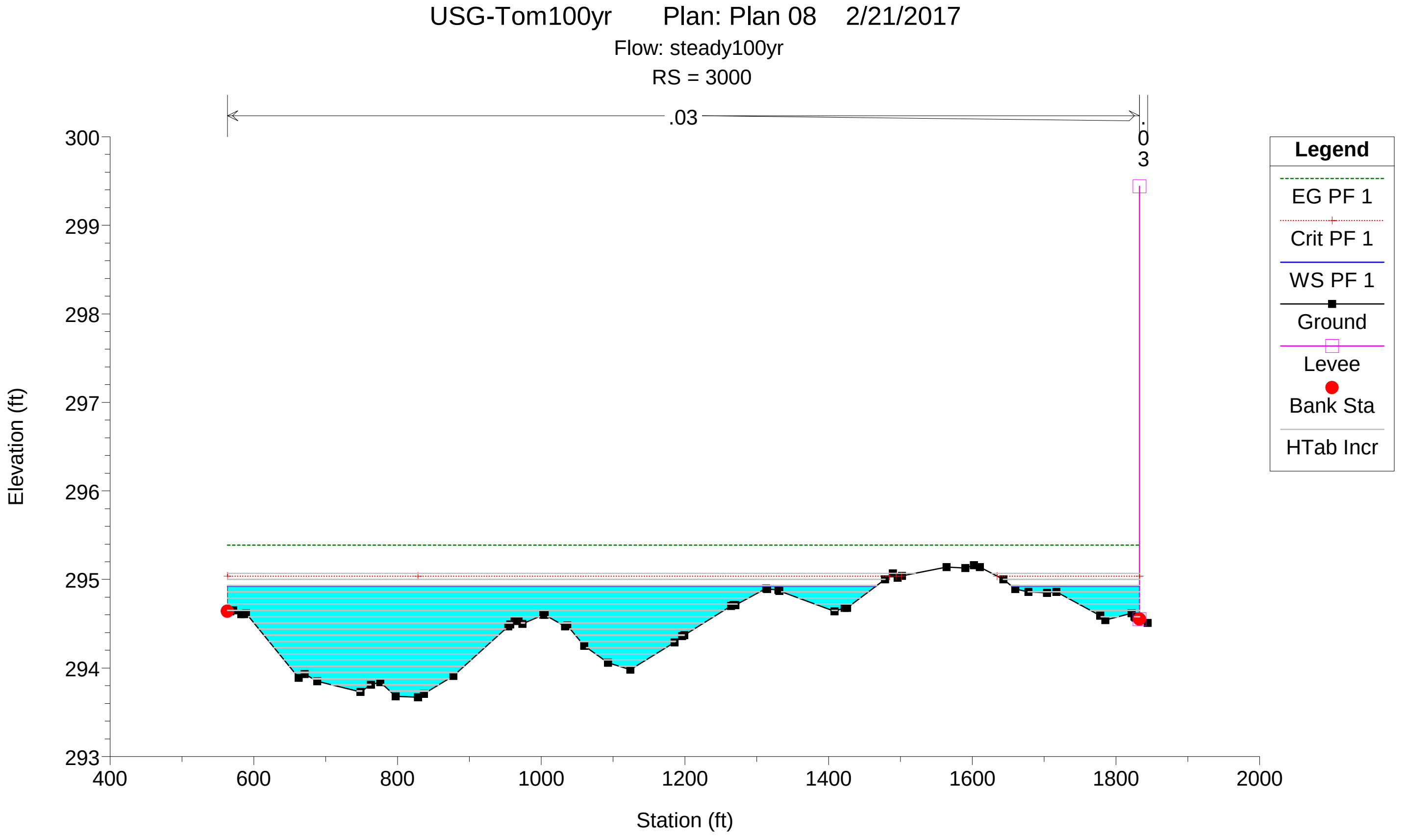
USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 5500
.03
.03
.03
Elevation (ft)
347.0
346.5
346.0
345.5
345.0
344.5
344.0
343.5
Station (ft)
0
100
200
300
400
500
600
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr

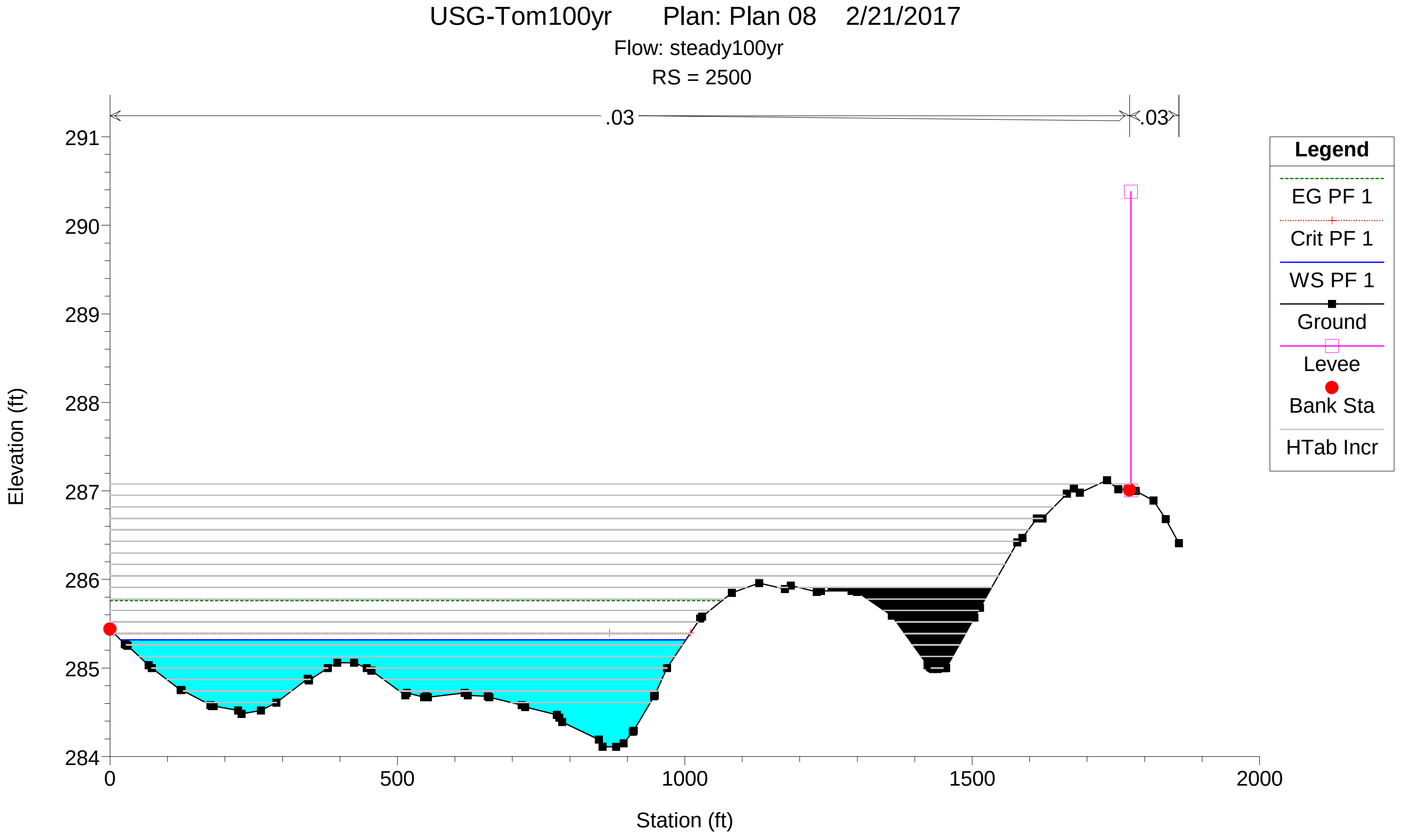

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 5000

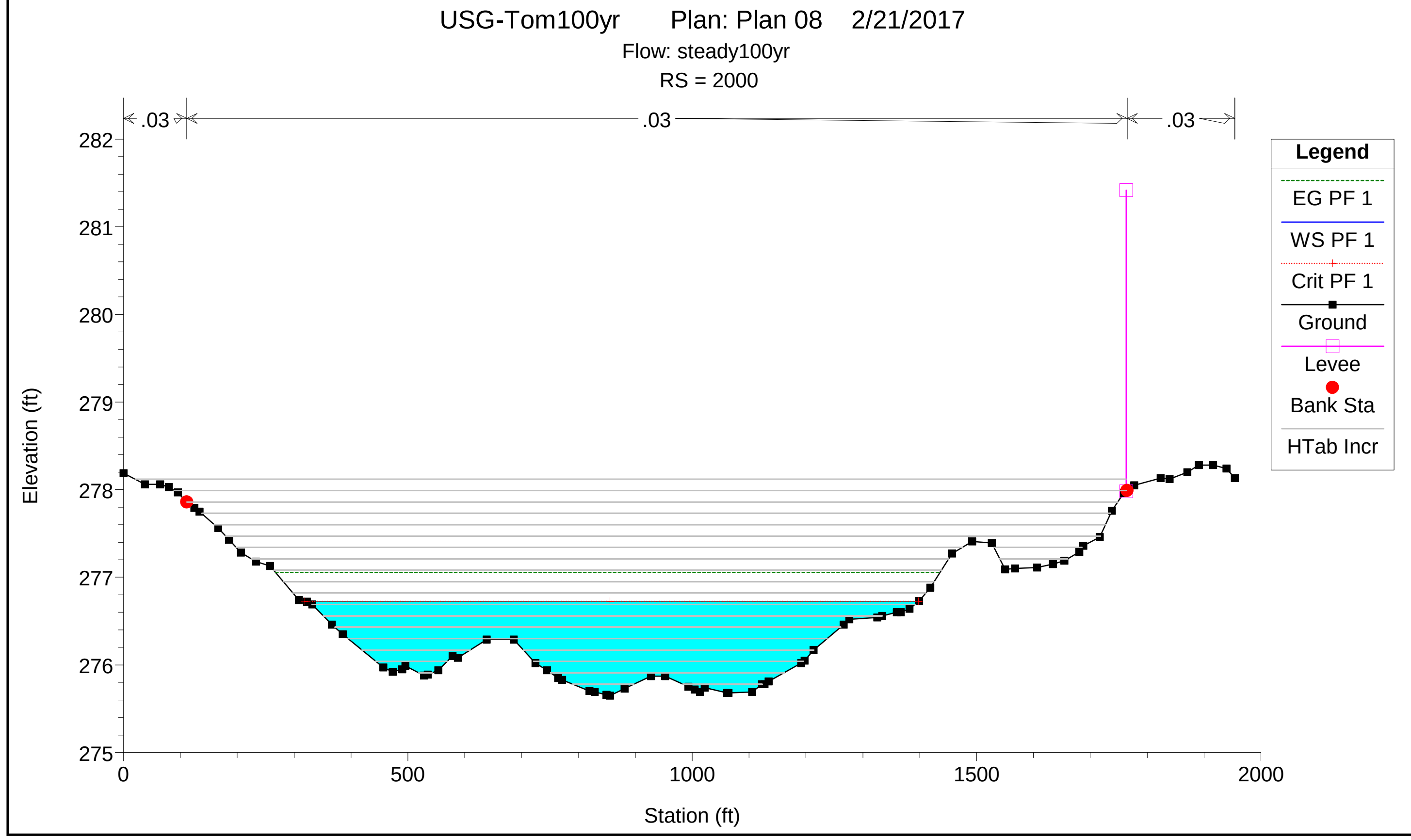

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 4500

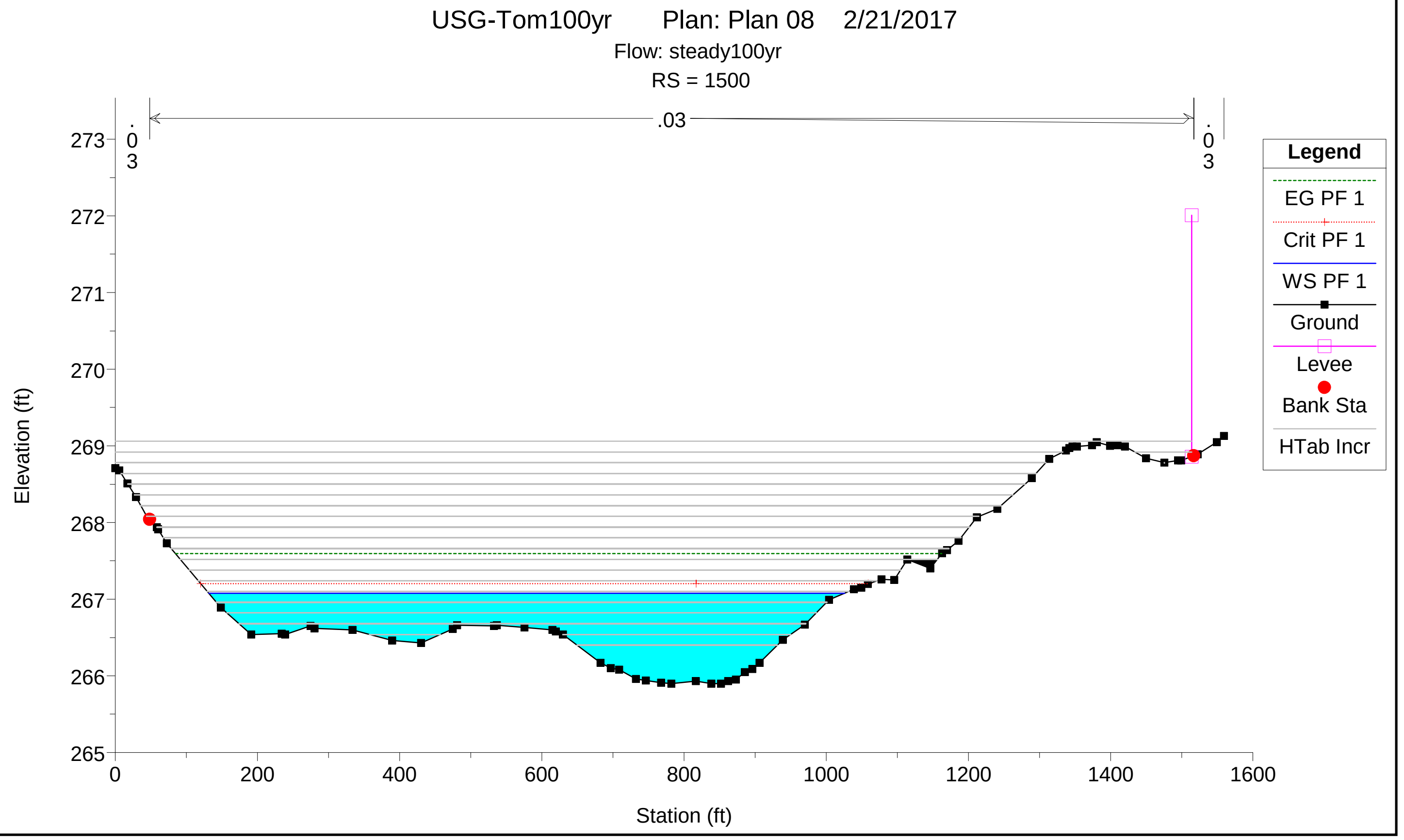

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 4000

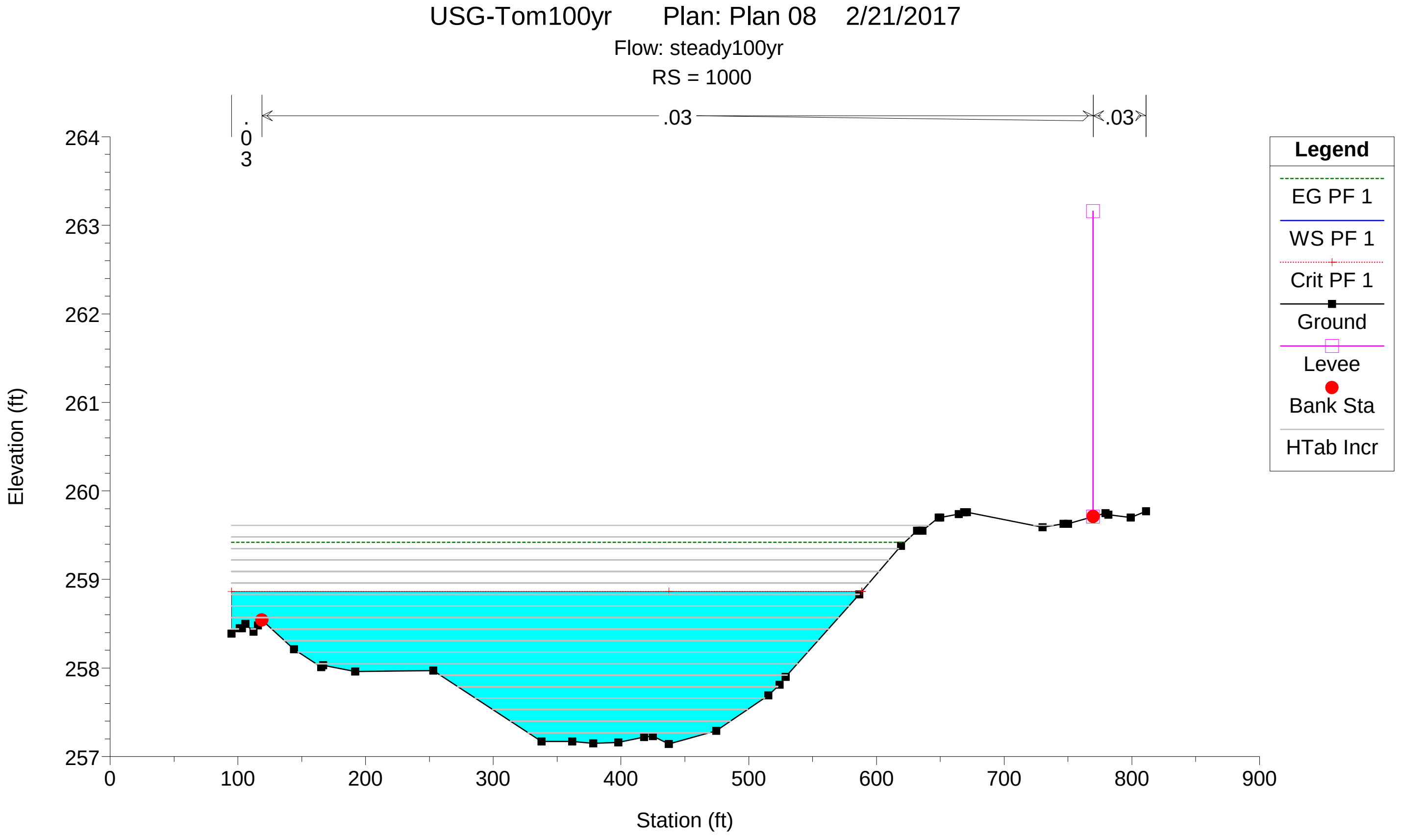

USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 3500


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 3000
.03
.03
Elevation (ft)
300
299
298
297
296
295
294
293
400
600
800
1000
1200
1400
1600
1800
2000
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 2500
.03
.03
Elevation (ft)
291
290
289
288
287
286
285
284
0
500
1000
1500
2000
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 2000
.03
.03
.03
Elevation (ft)
282
281
280
279
278
277
276
275
0
500
1000
1500
2000
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 1500
.03
.03
.03
Elevation (ft)
273
272
271
270
269
268
267
266
265
0
200
400
600
800
1000
1200
1400
1600
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Levee
Bank Sta
HTab Incr


USG-Tom100yr Plan: Plan 08 2/21/2017
Flow: steady100yr
RS = 1000
.03
.03
.03
Elevation (ft)
264
263
262
261
260
259
258
257
Station (ft)
0
100
200
300
400
500
600
700
800
900
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Levee
Bank Sta
HTab Incr

APPENDIX E

Scour Calculations

GENERAL AND LOCAL SCOUR CALCULATION RESULTS

Normal Depth Hydraulics (Design Discharge)																			Dune/Antidune Scour (Simons&Li/Kennedy)				General Scour							Low Flow Incisement	Totals					
																							Regime Equations Blench (1969)				Lacey (1930)				Dune	Low Flow	Blench	Lacey	Controlling	Required Scour
Location	Section	Q (cfs)	n	b (feet)	z (feet)	A (sf)	P (feet)	R (feet)	T (feet)	s_o (ft/ft)	y (feet)	V_{avg} (ft/s)	q (cfs/ft)	Vc (ft)	EGL (ft)	y_h (feet)	V_{max} (ft/s)	s_e (ft/ft)	Froude Number	Dune (D) or Antidune (A)	ha (feet)	Ds (feet) 1	Z	F_{b0}	yfo (feet)	Ds (feet) 2	Z	ym (feet)	Ds (feet) 3	Ds (feet) 4	Ds (feet)	Ds (feet)	Ds (feet)	Ds (feet)	Ds (feet)	Ds (feet)
Reference XS	23000	3300	0.030	50	8.33	438	124	3.53	246	0.0598	4.42	7.53	33	4.89	810.09	4.42	7.53	0.0337	0.99	D	4.42	0.74	0.60	1.80	8.51	0.68	0.50	5.80	2.90	3.00	0.74	3.00	0.68	2.90	7.3	10
Gypsum	22500	3300	0.030	50	8.33	103	90	1.14	81	0.0649	2.41	32.07	77	4.42	793.24	2.41	32.07	0.0930	5.01	A	27.77	13.88	0.60	1.80	14.92	6.54	0.50	5.80	2.90	3.00	13.88	3.00	6.54	2.90	26.3	34
Gypsum	22000	3300	0.030	50	8.33	305	92	3.31	262	0.0512	2.51	10.81	27	4.45	746.75	2.51	10.81	0.0468	1.76	A	3.16	1.58	0.60	1.80	7.42	1.94	0.50	5.80	2.90	3.00	1.58	3.00	1.94	2.90	9.4	12
Gypsum	21500	3300	0.030	50	8.33	243	111	2.18	196	0.0448	3.65	13.59	50	4.74	723.35	3.65	13.59	0.0451	2.15	A	4.99	2.49	0.60	1.80	11.10	3.01	0.50	5.80	2.90	3.00	2.49	3.00	3.01	2.90	11.4	15
Gypsum	21000	3300	0.030	50	8.33	225	100	2.24	116	0.0594	3.00	14.69	44	4.59	700.78	3.00	14.69	0.0496	1.86	A	5.83	2.91	0.60	1.80	10.26	3.15	0.50	5.80	2.90	3.00	2.91	3.00	3.15	2.90	12.0	16
Gypsum	20500	3300	0.030	50	8.33	147	107	1.37	64	-0.0002	3.40	22.45	76	4.68	675.97	3.40	22.45	0.0164	2.60	A	13.61	6.80	0.60	1.80	14.79	5.48	0.50	5.80	2.90	3.00	6.80	3.00	5.48	2.90	18.2	24
Gypsum	20000	3300	0.030	50	8.33	568	90	6.32	492	0.0307	2.38	5.81	14	4.41	667.77	2.38	5.81	0.0300	0.99	D	2.38	0.40	0.60	1.80	4.74	0.46	0.50	5.80	2.90	3.00	0.40	3.00	0.46	2.90	6.8	9
Gypsum	19500	3300	0.030	400	4.55	267	408	0.65	585	0.0343	0.91	12.36	11	3.76	652.79	0.91	12.36	0.0337	3.22	A	4.12	2.06	0.60	1.80	4.13	1.57	0.50	5.80	2.90	1.00	2.06	1.00	1.57	2.90	7.5	10
Gypsum	19000	3300	0.030	400	4.55	545	428	1.27	509	0.0326	3.00	6.05	18	4.59	635.93	3.00	6.05	0.0277	1.03	A	0.99	0.49	0.60	1.80	5.68	0.41	0.50	5.80	2.90	1.00	0.49	1.00	0.41	2.90	4.8	6
Gypsum	18500	3300	0.030	400	4.55	207	419	0.49	231	0.0309	2.02	15.98	32	4.30	622.07	2.02	15.98	0.0369	2.98	A	6.89	3.45	0.60	1.80	8.33	2.98	0.50	5.80	2.90	1.00	3.45	1.00	2.98	2.90	10.3	13
Gypsum	18000	3300	0.030	400	4.55	537	422	1.27	628	0.0291	2.39	6.14	15	4.42	603.62	2.39	6.14	0.0290	1.17	A	1.02	0.51	0.60	1.80	4.93	0.57	0.50	5.80	2.90	1.00	0.51	1.00	0.57	2.90	5.0	6
Gypsum	17500	3300	0.030	400	4.55	404	423	0.96	683	0.0322	2.49	8.16	20	4.45	589.13	2.49	8.16	0.0310	1.87	A	1.80	0.90	0.60	1.80	6.12	1.18	0.50	5.80	2.90	1.00	0.90	1.00	1.18	2.90	6.0	8
Gypsum	17000	3300	0.030	400	4.55	531	428	1.24	884	0.0260	3.05	6.21	19	4.60	573.64	3.05	6.21	0.0285	1.41	A	1.04	0.52	0.60	1.80	5.84	0.45	0.50	5.80	2.90	1.00	0.52	1.00	0.45	2.90	4.9	6
Gypsum	16500	3300	0.030	400	4.55	441	414	1.07	688	0.0277	1.52	7.48	11	4.10	559.38	1.52	7.48	0.0267	1.65	A	1.51	0.76	0.60	1.80	4.16	0.97	0.50	5.80	2.90	1.00	0.76	1.00	0.97	2.90	5.6	7
Gypsum	16000	3300	0.030	400	4.55	467	420	1.11	440	0.0292	2.14	7.06	15	4.34	546.05	2.14	7.06	0.0279	1.21	A	1.35	0.67	0.60	1.80	5.02	0.87	0.50	5.80	2.90	1.00	0.67	1.00	0.87	2.90	5.4	7
Gypsum	15500	3300	0.030	400	4.55	337	419	0.80	376	0.0310	2.07	9.80	20	4.31	532.10	2.07	9.80	0.0299	1.82	A	2.59	1.30	0.60	1.80	6.11	1.60	0.50	5.80	2.90	1.00	1.30	1.00	1.60	2.90	6.8	9
Gypsum	15000	3300	0.030	400	4.55	331	424	0.78	203	0.0325	2.56	9.97	26	4.47	517.15	2.56	9.97	0.0312	1.38	A	2.68	1.34	0.60	1.80	7.13	1.72	0.50	5.80	2.90	1.00	1.34	1.00	1.72	2.90	7.0	9
Gypsum	14500	3300	0.030	400	4.55	255	420	0.61	200	0.0137	2.15	12.96	28	4.34	501.56	2.15	12.96	0.0121	2.02	A	4.53	2.27	0.60	1.80	7.56	2.38	0.50	5.80	2.90	1.00	2.27	1.00	2.38	2.90	8.5	11
Gypsum	14000	3300	0.030	400	4.55	1692	451	3.75	406	-0.0005	5.50	1.95	11	5.08	495.51	5.50	1.95	0.0009	0.17	D	5.50	0.92	0.60	1.80	4.00	0.00	0.50	5.80	2.90	1.00	0.92	1.00	0.00	2.90	4.8	6
Gypsum	13500	3300	0.030	400	4.55	434	448	0.97	241	0.0106	5.11	7.61	39	5.01	495.07	5.11	7.61	0.0155	1.00	D	5.11	0.85	0.60	1.80	9.44	0.55	0.50	5.80	2.90	1.00	0.85	1.00	0.55	2.90	5.3	7
Gypsum	13000	3300	0.030	400	4.55	383	412	0.93	496	0.0206	1.28	8.61	11	3.98	487.34	1.28	8.61	0.0204	1.70	A	2.00	1.00	0.60	1.80	4.07	1.16	0.50	5.80	2.90	1.00	1.00	1.00	1.16	2.90	6.1	8
Gypsum	12500	3300	0.030	400	4.55	453	416	1.09	393	0.0193	1.70	7.29	12	4.17	477.12	1.70	7.29	0.0181	1.15	A	1.43	0.72	0.60	1.80	4.40	0.94	0.50	5.80	2.90	1.00	0.72	1.00	0.94	2.90	5.6	7
Gypsum	12000	3300	0.030	400	4.55	425	420	1.01	401	0.0165	2.14	7.77	17	4.34	468.08	2.14	7.77	0.0175	1.33	A	1.63	0.82	0.60	1.80	5.36	1.07	0.50	5.80	2.90	1.00	0.82	1.00	1.07	2.90	5.8	8
Gypsum	11500	3300	0.030	400	4.55	583	420	1.39	599	0.0218	2.11	5.66	12	4.33	459.34	2.11	5.66	0.0209	1.01	A	0.86	0.43	0.60	1.80	4.30	0.47	0.50	5.80	2.90	1.00	0.43	1.00	0.47	2.90	4.8	6
Gypsum	11000	3300	0.030	400	4.55	395	419	0.94	466	0.0218	1.99	8.35	17	4.28	448.91	1.99	8.35	0.0218	1.60	A	1.88	0.94	0.60	1.80	5.35	1.22	0.50	5.80	2.90	1.00	0.94	1.00	1.22	2.90	6.1	8
Gypsum	10500	3300	0.030	400	4.55	512	422	1.21	456	0.0128	2.39	6.44	15	4.42	437.99	2.39	6.44	0.0145	1.07	A	1.12	0.56	0.60	1.80	5.09	0.66	0.50	5.80	2.90	1.00	0.56	1.00	0.66	2.90	5.1	7
Gypsum	10000	3300	0.030	400	4.55	518	415	1.25	482	0.0189	1.56	6.37	10	4.11	430.73	1.56	6.37	0.0184	1.08	A	1.10	0.55	0.60	1.80	3.80	0.72	0.50	5.80	2.90	1.00	0.55	1.00	0.72	2.90	5.2	7
Gypsum	9500	3300	0.030	400	4.55	411	413	1.00	388	0.0161	1.42	8.02	11	4.05	421.52	1.42	8.02	0.0141	1.37	A	1.74	0.87	0.60	1.80	4.16	1.08	0.50	5.80	2.90	1.00	0.87	1.00	1.08	2.90	5.8	8
Gypsum	9000	3300	0.030	400	4.55	490	425	1.15	351	0.0143	2.72	6.73	18	4.51	414.46	2.72	6.73	0.0115	1.00	D	2.72	0.45	0.60	1.80	5.71	0.71	0.50	5.80	2.90	1.00	0.45	1.00	0.71	2.90	5.1	7
Gypsum	8500	3300	0.030	400	4.55	378	437	0.87	131	0.0088	3.93	8.72	34	4.80	408.72	3.93	8.72	0.0093	0.90	D	3.93	0.66	0.60	1.80	8.67	1.27	0.50	5.80	2.90	1.00	0.66	1.00	1.27	2.90	5.8	8
Gypsum	8000	3300	0.030	400	4.55	425	434	0.98	228	0.0265	3.61	7.76	28	4.73	404.06	3.61	7.76	0.0256	1.00	D	3.61	0.60	0.60	1.80	7.58	0.94	0.50	5.80	2.90	1.00	0.60	1.00	0.94	2.90	5.4	7
Gypsum	7500	3300	0.030	400	4.55	209	411	0.51	216	0.0201	1.15	15.82	18	3.91	391.27	1.15	15.82	0.0211	2.84	A	6.76	3.38	0.60	1.80	5.69	2.26	0.50	5.80	2.90	1.00	3.38	1.00	2.26	2.90	9.5	12
Gypsum	7000	3300	0.030	400	4.55	429	434	0.99	232	0.0166	3.62	7.70	28	4.73	380.72	3.62	7.70	0.0175	1.00	D	3.62	0.60	0.60	1.80	7.56	0.91	0.50	5.80	2.90	1.00	0.60	1.00	0.91	2.90	5.4	7
Gypsum	6500	3300	0.030	400	4.55	318	422	0.75	254	0.0264	2.40	10.37	25	4.42	371.95	2.40	10.37	0.0301	1.63	A	2.90	1.45	0.60	1.80	7.01	1.80	0.50	5.80	2.90	1.00	1.45	1.00	1.80	2.90	7.2	9
Gypsum	6000	3300	0.030	400	4.55	450	413	1.09	527	0.0219	1.39	7.34	10	4.04	356.89	1.39	7.34	0.0220	1.40	A	1.45	0.73	0.60	1.80	3.87	0.93	0.50	5.80	2.90	1.00	0.73	1.00	0.93	2.90	5.6	7
Gypsum	5500	3300	0.030	400	4.55	493	414	1.19	490	0.0205	1.51	6.69	10	4.09	345.90	1.51	6.69	0.0205	1.17	A	1.21	0.60	0.60	1.80	3.84	0.79	0.50	5.80	2.90	1.00	0.60	1.00	0.79	2.90	5.3	7
Gypsum	5000	3300	0.030	400	50.00	485	548	0.88	573	0.0196	1.48	6.81	10	4.08	335.63	1.48	6.81	0.0211	1.30	A	1.25	0.63	0.60	1.80	3.84	0.82	0.50	5.80	2.90	0.50	0.63	0.50	0.82	2.90	4.8	6
Gypsum	4500	3300	0.030	400	50.00	664	506	1.31	1053	0.0220	1.06	4.97	5	3.86	325.07	1.06	4.97	0.0208	1.10	A	0.67	0.33	0.60	1.80	2.49	0.43	0.50	5.80	2.90	0.50	0.33	0.50	0.43	2.90	4.2	5
Gypsum	4000	3300	0.030	400	50.00	578	558	1.04	876	0.0192	1.58	5.71	9	4.12	314.69	1.58	5.71	0.0188	1.24	A	0.88	0.44	0.60	1.80	3.56	0.56	0.50	5.80	2.90	0.50	0.44	0.50	0.56	2.90	4.4	6
Gypsum	3500	3300	0.030	400	50.00	663	590	1.12	937	0.0187	1.90	4.98	9	4.25	305.31	1.90	4.98	0.0198	1.04	A	0.67	0.33	0.60	1.80	3.68	0.31	0.50	5.80	2.90	0.50	0.33	0.50	0.31	2.90	4.0	5
Gypsum	3000	3300	0.030	400	50.00	604	525	1.15	1081	0.0191	1.25	5.46	7	3.96	295.39	1.25	5.46	0.0193	1.29	A	0.80	0.40	0.60	1.80	2.96	0.52	0.50	5.80	2.90	0.50	0.40	0.50	0.52	2.90	4.3	6
Gypsum	2500	3300	0.030	400	50.00	618	521	1.19	983	0.0169	1.21	5.34	6	3.94	285.76	1.21	5.34	0.0174	1.19	A	0.77	0.38	0.60	1.80	2.85	0.50	0.50	5.80	2.90	0.50	0.38	0.50	0.50	2.90	4.3	6
Gypsum	2000	3300	0.030	400	50.00	716	507	1.41	1079	0.0195	1.07	4.61	5	3.86	277.05	1.07	4.61	0.0189	1.00	D	1.07	0.18	0.60	1.80	2.38	0.36	0.50	5.80	2.90	0.50	0.18	0.50	0.36	2.90	3.9	5
Gypsum	1500	3300	0.030	400	50.00	572	518	1.10	894	0.0175	1.18	5.77	7	3.93	267.59	1.18	5.77	0.0163	1.27	A	0.90	0.45	0.60	1.80	2.95	0.59	0.50	5.80	2.90	0.50	0.45	0.50	0.59	2.90	4.4	6
Reference XS	1000	3300	0.030	400	50.00	549	572	0.96	493	-	1.72	6.01	10	4.18	259.42	1.72	6.01	0.2594	1.00	D	1.72	0.29	0.60	1.80	3.90	0.62	0.50	5.80	2.90	0.50	0.29	0.50	0.62	2.90	4.3	6

TOTAL SCOUR SUMMARY:

Channel Characteristics:

Soft Bottom Channel **D_{50} = 1 mm**

Contracted sections exists at bridge crossings.

Q_{100} varies between super and sub-critical thru entire reach.

Vc is less than V thru entire reach. (Live-bed Contraction Scour only)

Contraction Scour Equations:

Calculate V_c:

$$Vc = K_u Y^{1/6} D^{1/3}$$

If Vc > V; then Clear-Water contraction scour exists. Solve for Clear-Water contraction scour.
If V > Vc; then Live-Bed contraction scour exists. Solve for Live-Bed contraction scour.

V_c: Critical velocity above which bed material of size D and smaller will be transported, m/s (ft/s)
Y: Average depth of flow upstream of the bridge, m (ft)
V: Average velocity upstream of the bridge, m/s (ft/s)
D: Particle size for Vc, m (ft)
D_{50}: Particle size in a mixture of which 50 percent are smaller, m (ft)
K_u: 6.19 SI Units
K_u: 11.17 English Units

Live-Bed Contraction Scour

$$Y_2/Y_1 = (Q_2/Q_1)^{6/7} * (W_1/W_2)^{k1}$$

$$Y_s = Y_2 - Y_o = \text{(average contraction scour depth)}$$

Average depth in the upstream main channel, m (ft)
Average depth in the contracted section, m (ft)
Existing depth in the contracted section before scour, m (ft)
Flow in the upstream channel transporting sediment, m^3/s (ft^3/s)
Flow in the contracted channel, m^3/s (ft^3/s)
Bottom width of the upstream main channel that is transporting bed material, m (ft)
Bottom width of the main channel in the contracted section less pier widths, m (ft)
Exponent determined below
$(tau/roe)^{.5} = (gY_1S_1)^{.5}$, shear velocity in the upstream section, m/s (ft/s)
Fall Velocity of bed material based on the D50 (For fall velocity in English units, multiply w in m/s by 3.28)
: Acceleration of gravity (9.81 m/s^2) (32.2 ft/s^2)
: Slope of energy grade line of main channel, m/m (ft/ft)
: Shear stress on the bed, Pa (N/m^2) (lb/ft^2)
: Density of water (1000 kg/m^3) (1.94 $slugs/ft^3$)
:
:
:
:
:
:
:
:
:
:

General Scour Equations:

Zeller's Equation

$$y_{gs} = y_{max}[(0.0685 * V_m^{0.8})/(y_h^{0.4} * S_e^{0.3}) - 1]$$

y_{gs}: general scour depth, (ft)
y_{max}: maximum depth of flow, (ft)
V_m: average velocity of flow, (ft/s)
y_h: hydraulic depth of flow, (ft)
S_e: energy slope (or bed slope for uniform flow), (ft)

Regime Equations:

Neill's Equation for Incised Channels
No incised sections; therefore N/A

Blench Equation

$$y_{fo} = q_f^{2/3}/F_{b0}^{1/3}$$

y_{f0}: water depth for zero bed sediment transport, (ft)
q_f: design discharge per unit width, ($ft^3/s/ft$)
F_{b0}: Blench's "zero bed factor" in ft/s^2 from Figure 9.

Lacey's Equation

$$y_m = 0.47 * (Q/f)^{1/3}$$

y_m: mean water depth at design discharge, (ft)
Q: design discharge, (ft^3/s)
f: Lacey's silt factor = $1.76 * D_m^{1/2}$
D_m: mean grain size of bed material, (mm)

Competent (Limiting) Velocity Approach Neill

$$ys = y_m(V_m/V_{co} - 1)$$

y_s: Scoured depth below stream bed, (ft)
y_m: mean depth, (ft)
V_{co}: competent mean velocity, (ft/s)
V_m: mean velocity, (ft/s)

Competent Velocity Approach (Alvarez and Alfaro)
(For sands or gravel of d_{75} < 6 mm)

$$yms = 0.365 * Q^{0.784}/(T^{0.784} * d_{50}^{0.157})$$

y_{ms}: flow depth from the design water level to the mean scoured depth
Q: flow rate, (m^3/s)
T: water surface width, (m)
d_{50}: median sediment size (mm)

APPENDIX F

Sediment Deposition Calculations

Soil Group	**Rainfall Factor - R**	**Erodability Factor - K**	**Topographic Factor - LS**	**Cover Factor - C**	**Soil Loss per Unit Area - A (tons per acre per year)**	**Area (acre)**	**Total Erosion (tons per year)**	**Sediment Delivery Ratio**	**Total Sediment Depositon (tons per year)**
A	20	0.1	0.792	0.2	0.32	1400	444	-	-
D	20	0.51	8.120	0.2	16.56	2600	43068	-	-
Total	-	-	-	-	-	-	43512	0.2	8702.4

APPENDIX G

Riprap Design Calculations

Sta. 210+00 to Sta. 230+00

```
Date: 03/29/2017 Time: 15:04
************************************************************
*                RIPRAP DESIGN SYSTEM (RDS)                *
*                            BY                            *
*                   WEST Consultants, Inc.                 *
*                                                          *
*                                                          *
* Version 3.0                                  March, 2005 *
*                                                          *
*                                                          *
* COPYRIGHT (c) 2005                                       *
* WEST CONSULTANTS, INC.                                   *
* 16870 WEST BERNARDO DRIVE               PH: 858-487-9378 *
* SUITE 340                               FAX:858-487-9448 *
* SAN DIEGO, CA 92127          WEB:WWW.WESTCONSULTANTS.COM *
************************************************************



Project: USG-Top
Description: 25-YR Prop Westerly Sta. 21000-23000

______________________   USACE Method ______________________


Input Parameters:
-----------------
Velocity Type                                        Average
Channel Shape                                        Natural
Channel Type                                        Straight
Bend Angle (deg)                                         N/A
Average Channel Velocity                          14.00 ft/s
Bottom width                                             N/A
Bend Radius                                              N/A
Top Width                                                N/A
Unit Weight of Stone                          165. lbs/cu ft
Riprap Layer Thickness                                  1.00
Local Flow Depth                                     1.87 ft
Cotangent of Side Slope                                 2.00
Safety Factor                                            1.2
Riprap Placement                                Channel Bank
Rock Type                                            Angular


Output Results:
---------------

Computed D30                                         1.87 ft
Computed Local Depth Averaged Velocity            14.00 ft/s
Local Velocity/Avg. Velocity                            1.00
Side Slope Correction Factor                            1.18
Correction for Layer Thickness                          1.00
Correction for Secondary Currents                       1.00


  *** Using Gradations from COE ETL 1110-2-120 ***


Specific Weight     165.0 lbs/cu ft
Layer Thickness            4.000 ft
Selected Minimum D30        1.95 ft
Selected Minimum D90        2.82 ft


                                       Stone Weight, lbs
Percent Lighter by Weight         Minimum            Maximum
____________________________________________________________
W100                                2212.              5529.
 W50                                1106.              1637.
 W15                                 346.               818.
```

Sta. 150+00 to Sta. 205+00

```
Date: 03/29/2017 Time: 15:14
************************************************************
*                RIPRAP DESIGN SYSTEM (RDS)                *
*                            BY                            *
*                   WEST Consultants, Inc.                 *
*                                                          *
*                                                          *
* Version 3.0                                  March, 2005 *
*                                                          *
*                                                          *
* COPYRIGHT (c) 2005                                       *
* WEST CONSULTANTS, INC.                                   *
* 16870 WEST BERNARDO DRIVE               PH: 858-487-9378 *
* SUITE 340                               FAX:858-487-9448 *
* SAN DIEGO, CA 92127          WEB:WWW.WESTCONSULTANTS.COM *
************************************************************


Project: USG-Mid
Description: 25-YR Prop Westerly Sta. 20500-15000

______________________   USACE Method ______________________


Input Parameters:
-----------------
Velocity Type                                        Average
Channel Shape                                        Natural
Channel Type                                        Straight
Bend Angle (deg)                                         N/A
Average Channel Velocity                           9.00 ft/s
Bottom width                                             N/A
Bend Radius                                              N/A
Top Width                                                N/A
Unit Weight of Stone                          165. lbs/cu ft
Riprap Layer Thickness                                  1.00
Local Flow Depth                                     1.59 ft
Cotangent of Side Slope                                 2.00
Safety Factor                                            1.2
Riprap Placement                                Channel Bank
Rock Type                                            Angular


Output Results:
---------------

Computed D30                                         0.64 ft
Computed Local Depth Averaged Velocity             9.00 ft/s
Local Velocity/Avg. Velocity                            1.00
Side Slope Correction Factor                            1.18
Correction for Layer Thickness                          1.00
Correction for Secondary Currents                       1.00


  *** Using Gradations from COE ETL 1110-2-120 ***


Specific Weight     165.0 lbs/cu ft
Layer Thickness            1.500 ft
Selected Minimum D30        0.73 ft
Selected Minimum D90        1.06 ft


                                       Stone Weight, lbs
Percent Lighter by Weight         Minimum            Maximum
____________________________________________________________
W100                                 117.               292.
 W50                                  58.                86.
 W15                                  18.                43.
```

Sta. 10+00 to Sta. 145+00

```
Date: 03/29/2017 Time: 15:22
************************************************************
*                RIPRAP DESIGN SYSTEM (RDS)                *
*                            BY                            *
*                   WEST Consultants, Inc.                 *
*                                                          *
*                                                          *
* Version 3.0                                  March, 2005 *
*                                                          *
*                                                          *
* COPYRIGHT (c) 2005                                       *
* WEST CONSULTANTS, INC.                                   *
* 16870 WEST BERNARDO DRIVE              PH: 858-487-9378 *
* SUITE 340                              FAX:858-487-9448 *
* SAN DIEGO, CA 92127          WEB:WWW.WESTCONSULTANTS.COM *
************************************************************


Project: USG-Base
Description: 25-YR Prop Westerly Sta. 14500-1000

______________________  USACE Method ______________________


Input Parameters:
-----------------
Velocity Type                                        Average
Channel Shape                                        Natural
Channel Type                                        Straight
Bend Angle (deg)                                         N/A
Average Channel Velocity                           6.00 ft/s
Bottom width                                             N/A
Bend Radius                                              N/A
Top Width                                                N/A
Unit Weight of Stone                           165. lbs/cu ft
Riprap Layer Thickness                                  1.00
Local Flow Depth                                     0.88 ft
Cotangent of Side Slope                                 2.00
Safety Factor                                            1.2
Riprap Placement                                Channel Bank
Rock Type                                            Angular


Output Results:
---------------

Computed D30                                         0.27 ft
Computed Local Depth Averaged Velocity             6.00 ft/s
Local Velocity/Avg. Velocity                            1.00
Side Slope Correction Factor                            1.18
Correction for Layer Thickness                          1.00
Correction for Secondary Currents                       1.00


  *** Using Gradations from COE ETL 1110-2-120 ***


Specific Weight     165.0 lbs/cu ft
Layer Thickness           0.750 ft
Selected Minimum D30       0.37 ft
Selected Minimum D90       0.53 ft


                                       Stone Weight, lbs
Percent Lighter by Weight         Minimum            Maximum
____________________________________________________________
W100                                  15.                36.
 W50                                   7.                11.
 W15                                   2.                 5.
```

APPENDIX G-2:
2018 GROUNDWATER CONDITIONS MEMORANDUM

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TODD
GROUNDWATER

November 14, 2018

MEMORANDUM

To: Cheryl Tubbs, Lilburn Corporation

From: Maureen Reilly, PE and Iris Priestaf, PhD

Re: Update on Groundwater Conditions

The United States Gypsum (USG) Company Expansion/Modernization Final Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS), adopted 2008 by Imperial County, provided an investigation of groundwater in Coyote Wells Valley Basin and the potential impacts from the expanded USG plant. Subsequently USG has been actively monitoring groundwater conditions in the Coyote Wells Groundwater Basin and providing Annual Reports. Recently, the Bureau of Land Management (BLM) has requested further analysis of groundwater conditions in the Coyote Wells Valley and Borrego Valley groundwater basins. A focus is recent change in groundwater conditions that may have contributed to the sudden onset of adverse flow conditions in San Felipe Creek and the San Sebastian Marsh, which is critical habitat for desert pupfish. Recognizing this concern, this memorandum provides an overview of the Borrego Valley Basin and Ocotillo-Clark Valley Groundwater Basin in relation to Coyote Wells Valley Basin, summarizes current monitoring of Coyote Wells Valley Basin, and examines changes in groundwater conditions in recent years.

1. SUMMARY

Four groundwater basins have been considered in this memorandum:

- Coyote Wells Valley (DWR No. 7-29)
- Borrego Valley- Borrego Springs (DWR No. 7-24.01)
- Borrego Valley- Ocotillo Wells (DWR No. 7-024.02)
- Ocotillo-Clark Valley (DWR No. 7-25)

This memorandum has focused on groundwater conditions in the **Coyote Wells Valley Basin**, where USG has developed and maintains a monitoring program for both water levels and water quality. Information from this program indicates no substantial changes in recent years.

Critical overdraft conditions in the **Borrego Springs Subbasin** are a long-term concern, but the ongoing pumping in this basin is not likely the cause of sudden changes in San Felipe Creek because the Borrego Springs pumping has continued over many years at a distance of over 20 miles from the San Sebastian Marsh.

The USG Quarry Well #2 is in the **Ocotillo Wells Subbasin**, adjacent to and upstream of San Felipe Creek. Pumping from Quarry Well #2 is unlikely to have caused the changes in San Felipe Creek because of its small pumping, distance from San Sebastian Marsh, and existence of intervening aquitards and fault barriers.

San Sebastian Marsh is in **Ocotillo-Clark Valley Basin** and was considered in this memorandum. Groundwater pumping has changed recently in proximity to San Sebastian Marsh. Specifically, groundwater pumping has been reduced by the conversion of historical agricultural lands to a solar farm. While no systematic analysis has been performed, it is possible that recent cessation of agricultural pumping from deep aquifers, with reduction of irrigation return flows that provide recharge to shallow aquifers, has resulted in downstream loss of San Felipe Creek flow.

2. DESCRIPTION OF GROUNDWATER BASINS

Figure 1 shows the Coyote Wells Valley Groundwater Basin, two subbasins of the Borrego Valley Basin, and Ocotillo-Clark Valley Groundwater Basin. The USG plant and its groundwater production wells are located in Coyote Wells Valley Groundwater Basin, as defined by the California Department of Water Resources (DWR, 2003).

Coyote Wells Valley Basin (Number 7-29) encompasses 64,000 acres (100 square miles) in the Yuha desert west of Imperial Valley, California. It is located mostly in Imperial County, with the western edge extending into San Diego County. The Basin is bounded by the Coyote Mountains to the north and the Jacumba Mountains to the west and southwest. These boundaries correspond generally to geologic contacts between alluvium and less permeable geologic formations as mapped by DWR. The southern basin boundary is the United States-Mexico border and the eastern boundary is a roughly north-south line from Superstition Mountain on the north to the international border and separates Coyote Wells Valley Basin from the Imperial Valley Groundwater Basin (Number 7-30). The major surface water drainage is Coyote Wash. Part of the northeastern boundary is a surface drainage divide connecting the Coyote Mountains with Superstition Mountain. Additional description is provided in the USG Annual reports. USG has three production wells in Coyote Wells Valley Basin (USG-4, USG-5, and USG-6).

Borrego Valley Groundwater Basin (7-24) was modified in 2016 by DWR. The basin was divided into two subbasins: Borrego Valley – Borrego Springs (7-24.01) and Borrego Valley – Ocotillo Wells (7-24.02). The active USG Quarry Well (specifically Quarry Well #2) is located in the Ocotillo Wells subbasin, as shown on Figure 1.

The Ocotillo Wells Subbasin underlies Lower Borrego Valley in eastern San Diego County and western Imperial County. As described in DWR's Bulletin 118, the subbasin is bound on the northeast and the east by the Coyote Creek fault and the Superstition Mountain fault. A surface drainage divide separates the Ocotillo Wells Subbasin from the adjoining Coyote Wells Valley groundwater basin to the south. The Fish Creek Mountains and Vallecito Mountains bound the west side of the subbasin. The subbasin is separated from the Borrego

Springs subbasin to the northwest by San Felipe Creek and is crossed by tributary washes to San Felipe Creek including Fish Creek Wash and Carrizo Wash. The aquifer is separated into an upper and lower aquifer by an aquitard estimated to be 100-200 feet thick; most pumping is expected to occur in the lower aquifer. US Gypsum has the one production well (Quarry Well #2) in the Ocotillo Wells Subbasin and is currently proposing to replace that well with a new nearby Well #3.

The Ocotillo-Clark Valley Groundwater Basin (Number 7-25) is east of Ocotillo Wells Subbasin. This subbasin is characterized by general groundwater flow toward Clark Dry Lake on the north end and the Salton Sea for the remainder of the basin. The groundwater basin has been developed historically for agricultural and domestic supply. Most of the agriculture near the Salton Sea is irrigated with imported water from Imperial Irrigation District; some farms have been supplied (at least historically) by groundwater, including fields farther west, visible on Figure 1 as green squares. Ocotillo-Clark Valley Basin includes the lower reaches of Fish Creek Wash, Carrizo Wash, and San Felipe Creek, and the San Sebastian Marsh.

3. CURRENT MONITORING PROGRAMS

3.1 Coyote Wells Valley Groundwater Basin

Since the 2008 EIR, USG (in partnership with the US Geological Survey) has been actively monitoring the Coyote Wells Valley Groundwater Basin; USG and their consultants have been preparing annual groundwater reports since 2012. These Annual Reports update the current monitoring network, assess water level and water quality data, and review if changes in groundwater conditions trigger previously-defined early warning thresholds. These thresholds (or performance standards) were derived from the 2008 EIR but have been updated through discussions with USG, the County, and the Sierra Club. The 2018 Annual Report provides an up-to-date summary of monitoring results and thresholds.

Table 1 identifies all active monitored wells within and just east of the groundwater basin. Water levels are monitored by the US Geological Survey (USGS) and US Gypsum, and water quality is monitored by USGS. In 2018, the USGS monitored 27 wells for water levels and 18 wells for water quality. The USGS provides water level and water quality data on a semi-annual basis. Water levels and quality are uploaded to the USGS portal and are included in subsequent year's annual report. USG has probes in five wells monitoring both water levels and water quality. USG data collection includes data loggers in USG-4, USG- 5, and USG-6 that measure water levels in these wells daily.

Table 1 also lists the wells that were recently monitored, along with the monitoring entity (USGS or USG) and any reasons for interruption of monitoring.

Locations of monitored wells across and beyond the basin are shown on **Figure 2;** blue indicates wells that have both level and quality data from 2018, yellow indicates wells with water level data only, and green indicates water quality data only. Currently inactive wells also are shown.

3.1.1 Water Levels

Figure 3 shows the location of key wells and hydrographs of groundwater levels. Key wells were selected on the basis of relatively complete water level histories and representative locations that show trends within the groundwater basin.

Monitoring wells 31B1 and 36D2, located near the USG production wells, show similar trends (decrease from 1990s to 2008, slight increase from 2008 to 2015 and a slight decrease from 2015 to 2018). This pattern mirrors the pumping at the USG plant, with decreased water levels in times of greater pumping and relative recovery during lower pumping. These short-term changes are not visible in wells located farther from the plant, for example, wells 24D1 or 16J1. These wells continue a steady trend (decreasing and increasing respectively) although USG pumping was reduced to half from 2009 to 2015. Wells along the eastern edge of the basin, 42L1 and to a lesser extent 32R1, reflect a seasonal variation, showing sharp increases shortly after peak precipitation events (1993 and 1997).

Of the 27 wells monitored, nine showed increasing water levels, five showed stable water levels, and 13 showed decreasing water levels. USG-5 showed the largest increase in water level (5.9 ft over the past year) and USG-4 showed a 3.5-foot decrease; however, these wells do not reflect static conditions but represent the variable pumping rate by USG.

3.1.2 Water Quality

The 2006 Draft and 2008 Final EIR/EIS indicated that the primary causes of potential groundwater quality degradation from increased groundwater production would include:

- lateral migration of saline water from Tertiary marine sediments that crop out in the Ocotillo and No Mirage area and areas to the east of Coyote Wells, or
- vertical migration of saline water from the Tertiary marine sediments present at depth below the alluvial aquifer.

The monitoring program is designed to detect changes in TDS concentrations due to increased pumping by USG. Use of TDS as an indicator for general mineral groundwater quality is a simplified, but widely accepted method to detect changes in general water quality. This has continued since 2008 with semi-annual monitoring over the basin.

Figures 4a and **4b** shows TDS concentrations by well for each spring monitoring event. **Figure 4a** shows TDS concentrations in all wells using a scale of 0 to 1,600 mg/L and **Figure 4b** shows TDS data from all but two wells with a more focused scale from 0 to 600 mg/L. Most wells show relatively stable TDS concentrations over time. Wells 24B1 and 30R1 showed an increase in TDS from 2012-2017 but have since shown a decrease in concentration.

3.1.3 Assessment of Groundwater Changes

Groundwater conditions are assessed with respect to thresholds for short-term water level changes, long-term water level changes, and groundwater quality.

Groundwater level declines can represent the drawdown effects of nearby pumping, for example, from USG wells. This is a localized and short-term phenomenon. In addition, groundwater levels in the Coyote Wells Valley Basin are characterized by long-term regional decline; additional pumping could cause a declining trend that is more widespread or greater than the predicted rate.

Short-term, localized drawdown effects on well yield (i.e., well interference) are assessed with the following performance standard:

> *Well interference is defined as the combined pumping from all USG pumping wells so as* ***not to exceed 5 feet of drawdown at the nearest water-supply well.***

No private wells have reported well interference issues due to USG pumping; water levels vary when the well is pumping but recover quickly when wells are not pumping.

To assess potential impacts of USG pumping on long-term regional decline in groundwater levels, the performance standard is designed to act as an early warning system; it is stated as follows:

> *Water level decline is defined as four consecutive* ***annual*** *groundwater measurements (****spring only****) declining at a rate that is greater* ***than 0.1875 feet per year****, occurring at more than* ***10 percent of wells*** *in the regional monitoring program. As of 2016, there were 27 wells and therefore a significant decline would involve at least three (3) wells.*

In the 25 wells where water levels have been being monitored in 2018, none have showed a declining trend greater than the predicted rate for four consecutive sampling events. This indicates no additional steady groundwater decline attributable to USG pumping.

The following performance standard is used as an early warning of changing conditions from USG pumping and its potential effect on water quality:

> *A significant increasing trend in* ***total dissolved solids*** *(TDS) concentrations is defined as TDS concentrations in groundwater from any well in the groundwater basin whereby* ***four consecutive annual samples (collected each spring)*** *show a cumulative increase greater than* ***20 percent of the long-term average*** *for that well.*

TDS concentrations are steady, as defined by the updated 2018 USG performance standard. Eight of the eleven active monitoring wells with both 2017 and 2018 measurements showed a slight decrease in TDS concentrations. The three wells with any increase in TDS concentration (34B1, 36C2, and USG-6) showed a two, ten, and nine percent increase respectively. While 34B1 is located on the western edge of the alluvium, an area that may indicate poor water quality migration from other formations, the water levels at that well have declined only 0.05 ft over three years (2015-2018).

3.2 Ocotillo Wells Subbasin

There are only a few wells in Ocotillo Wells Subbasin. The USGS National Water Information System (NWIS) and DWR Water Data Library indicate only two wells in the subbasin with water level data. Well (12S/8E-22E1) located approximately 7 miles north-northwest of the Quarry Well, provides groundwater depth data for some time periods since 1951. Groundwater levels at this well in 2017 indicate that the depth to groundwater is 112.9 feet, which is within the range of observed groundwater levels at the well (102 to 117 feet below ground surface). Well 12S/9E-23D1, located about 7.5 miles northeast of the Quarry Well, shows groundwater depths greater than 150 feet from 1980 to 2014. The USG Quarry Well #2, located on the western margin of the subbasin, has a depth to groundwater of 307.5 feet.

Groundwater quality is only available for well 12S/9E-23D1 (7.5 miles away). Total dissolved solids (TDS) concentrations range between 1,650 and 1,740 milligrams per liter (mg/L).

4. CHANGES IN WATER USE

4.1 Coyote Wells Groundwater Basin

The main use of groundwater pumping within the Coyote Wells Valley Basin is industrial usage by the USG Plaster City plant. This groundwater is pumped from three US Gypsum production wells (USG- 4, 5, and 6) located in the center of the Basin as shown on **Figure 2.**

USG's pumping is shown in **Table 2**, groundwater pumping by USG in calendar year 2017 amounted to 362 AFY, the highest since 2008, and was as much as 575 AFY in 2005. **Figure 5** depicts the long-term pumping amounts with annual pumping data from 1970 to the present.

Other groundwater pumping from the basin occurs for residential, commercial, and industrial uses. Wells of two mutual water companies and individual domestic wells have been estimated to produce 127 AFY as of 2004 (Todd, 2007). No significant changes have occurred to water use in the basin.

4.2 Ocotillo Wells Subbasin

Water supply for Quarry operations, including dust suppression, was historically obtained from an on-site water well that was drilled on the eastern side of the wash and was permitted in 1983 under CUP No. 365-83. The water was non-potable (due to high dissolved solids) and was used exclusively for dust suppression. Production from the well declined due to incrustation, and the well ultimately became unusable. A second well, Quarry Well No. 2, was drilled in 1993 to replace the original well. CUP No. 635-83 was re-issued to the new well site with an approved withdrawal rate of 7,000 gallons per day (gpd). Quarry Well No. 2 is located in a wash northeast of the crushing facility. Water production from Well No. 2 has also declined over time from about 20 gallons per minute (gpm) to about 8 gpm. In 2000, the well was rehabilitated but did not achieve significant improvement in water production. Under existing conditions, water demand for operations at the Quarry is approximately 15,000 gpd. Quarry Well No. 2 currently produces 4,500 gpd. In 2017, USG's Quarry Well #2 produced 5.78 AF in 2017, with an average of 0.5 AF per month. This production is less than the current permitted limit of 7.8 AFY.

Figure 6 shows the location of Quarry Well #2 and the proposed replacement well Quarry Well #3.

Information on pumping in Ocotillo Wells is minimal, but the subbasin likely has very limited pumping. DWR estimated pumping of 257 AFY as part of its 2018 SGMA Basin Prioritization Process and Results (May 2018).

4.3 Ocotillo-Clark Valley Basin

Current groundwater uses in the basin include limited agriculture, domestic, and industrial (solar). Groundwater pumping has changed in recent years, as the Allegretti farm, located less than four miles northwest of San Sebastian Marsh, has since been developed as the Seville Solar Farm (EGI 2014). According to the Draft EIR and associated Water Supply Assessment for the solar project, the historical agricultural use of the area was about 2,800 AFY between 1996 and 2009. The current operation use of the Solar farm is estimated to use 215 AFY of water (EGI 2014). This change is noteworthy, because historical agricultural pumping from deep aquifers may have resulted in irrigation return flows. These return flows, that could represent recharge to shallow aquifers, would have ceased with conversion of the land use to a solar facility.

5. SURFACE WATER HYDROLOGY

The surface water hydrology generally is characterized by ephemeral streams (washes) that flow briefly after rain storms. The main drainages in Coyote Wells Valley are Coyote and Palm Canyon Wash, which drain east toward the Imperial Valley. Major channels draining the mountain front and crossing the Borrego Springs Subbasin and Ocotillo Wells subbasins are San Felipe Wash and Carrizo Wash; these are tributaries to San Felipe Creek, which crosses the Ocotillo-Clark Valley Basin to the Salton Sea.

San Felipe Creek is perennial in its lower reaches through San Sebastian Marsh. At least two springs (San Felipe Creek and Fish Creek springs) contribute to the perennial reach. The groundwater from the springs has been attributed to the shallow aquifer recharged by agricultural return flows based on deep aquifer pumping (EGI, 2014).

5.1 San Felipe Wash

San Felipe Creek is the main perennial stream crossing San Sebastian Marsh, which is designated natural critical habitat for the desert pupfish. The BLM and California Department of Fish and Wildlife (CDFW) have expressed concern over the reliability of perennial flows in San Felipe Creek and possible effects of groundwater pumping in upstream basins, including the Ocotillo Wells Subbasin.

An Information/Briefing Memorandum was prepared by BLM (Poff, 2017) to provide a potential explanation for adverse conditions affecting the marsh and pupfish, specifically the drastic dropping of water levels and drying of the creek. The memorandum explored seismic activities and impacts from pumping. With regard to the latter, the memo concluded that the sudden drop in groundwater levels was unlikely to be caused by distant groundwater pumping. Nonetheless, groundwater pumping could have long term effects.

5.2 Potential Quarry Impacts

The USG Quarry Well is upgradient from the Ocotillo-Clark Valley Groundwater Basin and thus potential impact of its pumping on San Felipe Creek and San Sebastian Marsh was considered. **Figure 6** shows the location of the Quarry Well #2 and #3 relative to the area of San Sebastian Marsh.

In brief, San Sebastian Marsh groundwater depletion is unlikely to be affected by pumping from the USG Quarry Well. The Quarry Well is located more than seven miles away, its pumping is small (5.78 AF in 2017), and its pumping occurs from the deeper aquifer as documented in the 2008 Final EIR/EIS. Moreover, Quarry Well #2 and the proposed Quarry Well #3 are in Ocotillo Wells Subbasin which is separated from Ocotillo-Clark Valley Groundwater Basin. The shared boundary of the Ocotillo Wells Subbasin and Ocotillo-Clark Valley Groundwater Basin is indicated in Figure 6. It is described in DWR Bulletin 118 as the trace of the Coyote Creek Fault and Superstition fault (DWR 2013). The faults are regarded as barriers to groundwater flow; DWR cites water level differences of 100 feet on opposite sides of the Coyote Creek fault as indicating that the fault is a barrier.

Based on the above and simplifying assumptions, the Theis equation was applied to calculate the expected drawdown from pumping Quarry Well #2. For estimation purposes, the following variables were used: the current maximum production rate of the well 6.25 gallons per minute, a hydraulic conductivity of 100 ft/day (average for a sandy/silty aquifer), an aquifer thickness of 700 feet, and storativity of 0.2 (DWR 2013). After one year of constant pumping, the expected drawdown is computed to be 0.01 feet 1,000 feet away, and 0.001 ft 7 miles away. These computed effects are insignificant, noting that the presence of intervening faults and aquitards would further reduce any impacts in Ocotillo-Clark Valley Basin.

6. CHANGES IN RELEVANT REGULATIONS

Since the 2008 Final EIR/EIS, the Sustainable Groundwater Management Act of 2014 (SGMA) was enacted and is currently being implemented. The SGMA applies to 127 groundwater basins defined by DWR and designated as medium- and high-priority. SGMA does not apply to the remaining groundwater basins (designated as very low- and low-priority); nonetheless, local agencies may choose to apply the SGMA framework. The Coyote Wells Valley Groundwater Basin (No. 7-29), which contains the U.S. Gypsum Plaster City facility, is designated by DWR as a very low priority basin. The Ocotillo Wells subbasin of Borrego

Valley (7-024.02) which contains the U.S. Gypsum Quarry, is also designated by DWR as a very low priority basin. Ocotillo-Clark Valley is low priority.

In September 2015, the Imperial County Board of Supervisors provided notice to DWR that Imperial County had resolved to assume the role of Groundwater Sustainability Agency (GSA) for all groundwater basins underlying the County. In its resolution to become a GSA (Imperial County Board of Supervisors Resolution No. 2015-122), the County expressed its commitment to sustainable groundwater use and cited its jurisdiction over groundwater basins county-wide. The County also cited its long experience and background in groundwater management and monitoring, including the County Groundwater Management Ordinance.

The Borrego Valley- Borrego Springs subbasin has been designated as critically overdrafted. The Borrego Valley GSA is the exclusive GSA of the San Diego portion of the Ocotillo Wells Subbasin and the neighboring Borrego Valley – Borrego Springs subbasin (7-24.01). The GSA is made up of the County of San Diego and Borrego Water district (through a Memorandum of Understanding).

The U.S. Environmental Protection Agency (USEPA) designated the Ocotillo-Coyote Wells Sole Source Aquifer in 1986. The Sole Source Aquifer program allows for USEPA environmental review of any project which is funded by federal money and evaluates the project’s potential to contaminate a sole source aquifer. If there is such a potential, the project should be modified to reduce or eliminate the risk, or federal financial support may be withdrawn (USEPA 2000). The area includes portions of the Coyote Wells Groundwater Basin and extends further west and south from the DWR defined groundwater basin. There have been no changes in the area designation.

7. CONCLUSIONS

Four groundwater basins have been considered in this memorandum:

- Coyote Wells Valley (DWR No. 7-29)
- Borrego Valley- Borrego Springs (DWR No. 7-24.01)
- Borrego Valley- Ocotillo Wells (DWR No. 7-024.02)
- Ocotillo-Clark Valley (DWR No. 7-25)

Coyote Wells Valley. This memorandum has focused on groundwater conditions in the Coyote Wells Valley Basin, where USG has developed and maintained a monitoring program and implemented performance standards that serve as an early warning to changes in the Coyote Wells Valley Basin. Water levels and water quality data are compiled, analyzed, and reported annually. Only limited changes have occurred in the basin from groundwater users. Changes in the basin since 2008 do not change the findings in the 2008 Final EIR/EIS. We note also that Coyote Wash and Palm Canyon Wash drain toward Imperial Valley, not San Felipe Creek.

Borrego Valley- Borrego Springs. The Borrego Valley has been subdivided into the Borrego Springs Subbasin and Ocotillo Wells Subbasin. Critical overdraft conditions in the Borrego Springs Subbasin are a long-term concern that are being addressed through the SGMA process. As noted in the BLM Information/Briefing Memo, the intensive pumping in this basin is not likely the cause of sudden changes in San Felipe Creek flows because the Borrego Springs pumping has continued over many years at a considerable distance from San Felipe Creek.

Borrego Valley- Ocotillo Wells. The USG Quarry Well #2 and the proposed USG Quarry Well #3 are in the Ocotillo Wells Subbasin, adjacent to and upstream of San Felipe Creek. Pumping from Quarry Well #2 is unlikely to have caused the changes in San Felipe Creek because of its small pumping, pumping from the deep aquifer, distance from San Sebastian Marsh, and existence of intervening fault barriers. Other pumping in the basin is ongoing and minor. Any changes in the basin since 2008 do not change the findings in the 2008 Final EIR/EIS.

Ocotillo-Clark Valley. San Sebastian Marsh is in Ocotillo-Clark Valley Basin, and thus, this basin was considered in this memorandum. While emphasizing that we have not conducted a systematic impacts analysis, we have noted that groundwater pumping has changed recently in proximity to San Sebastian Marsh. Specifically, groundwater pumping has been reduced by the conversion of historical agricultural lands to a solar farm. While speculative, it is possible that recent cessation of agricultural pumping from deep aquifers, with reduction of irrigation return flows that provide recharge to shallow aquifers, has resulted in downstream loss of creek flow.

8. REFERENCES

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US Geological Survey, National Water Information System, https://waterdata.usgs.gov/ca/nwis/nwis, Last Accessed: Sept 28, 2018.

US Environmental Protection Agency, Sole Source Aquifer Designations in EPA, Region 9 Fact Sheet, June 2000.

Table 1. List of Actively Monitored Wells and Available Data for 2018 in Coyote Wells

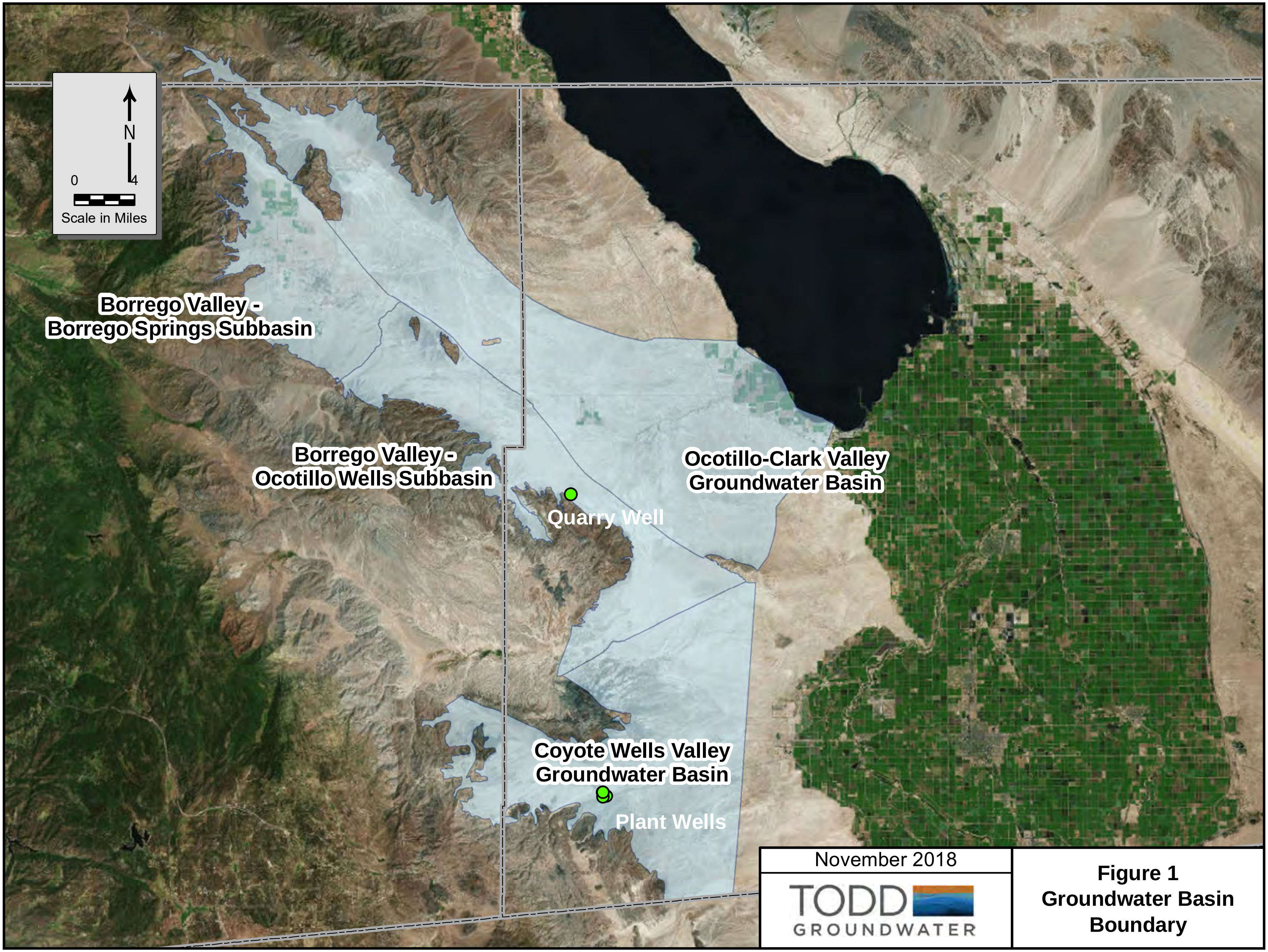
Well Name	Short Name	Active WL Network	Active WQ Network	First WL Measurement	First WQ Measurement	Agency
17S10E11H3	11H3	Y	Y	1987	1987	USGS
16S09E24B1	24B1	Y	Y	1976	1977	USGS
16S09E24D1	24D1	Y	Y	1976	1977	USGS
16S09E25K2	25K2	Y	Y	1972	1972	USGS
16S10E31B1	31B1	Y	Y	1993	2013	USGS
16S09E34B1	34B1	Y	Y	1998	1997	USGS
16S09E36A1	36A1 /MW-2B	Y	Y	2012	2013	US Gypsum
16S09E36A2	36A2 /MW-2A	Y	Y	2012	2013	US Gypsum
16S09E36H2	36H2 / USG-5	Y	Y	2015	2015	USGS / USG
17S10E11B1	11B1	Y		1975	*	USGS
17S10E11G4	11G4	Y		1978	*	USGS
17S11E16J1	16J1	Y		1970	1972	USGS
17S11E22E2	22E2	Y		1975	1975	USGS
16S11E23B1	23B1	Y		1974	1964	USGS
16S11E27F1	27F1	Y		1975	*	USGS
16S10E27R1	27R1	Y		1975	1975	USGS
16S10E28D1	28D1	Y		1974	1948	USGS
16S10E29H1	29H1	Y		1975	1975	USGS
16S10E32P1	32P1	Y		1992	*	USGS
15S11E32R1	32R1	Y		1974	1964	USGS
16S09E35M1	35M1	Y		1962	1962	USGS
16S09E36D2	36D2	Y		1975	1975	USGS
16S09E36G3	36G3 / USG-4	Y		2011	1963	US Gypsum
16S11E42L1	42L1	Y		1975	1975	USGS
16S09E25M2	25M2		Y	1991	1971	USGS
16S09E26F1	26F1		Y	1998	2013	USGS
16S10E30R1	30R1		Y	*	1959	USGS
16S09E36C2	36C2		Y	1975	1961	USGS
16S10E42A8	42A8		Y	*	1994	USGS

Wells Not Monitored in 2018 that were recently active

Well Name	Short Name	Agency	Reason
16S09E25M2	25M2	USGS	No reason given by USGS, WQ was monitored
16S09E26F1	26F1	USGS	No reason given by USGS, levels previously not measured due to active pumping, WQ was monitored
16S09E36B1	36B1 /USG-6	US Gypsum	Down for maintnance
17S10E11G1	11G1	USGS	No reason given by USGS, levels previously not measured due to active pumping

Table 2. Annual USG Pumping by Well (AFY)

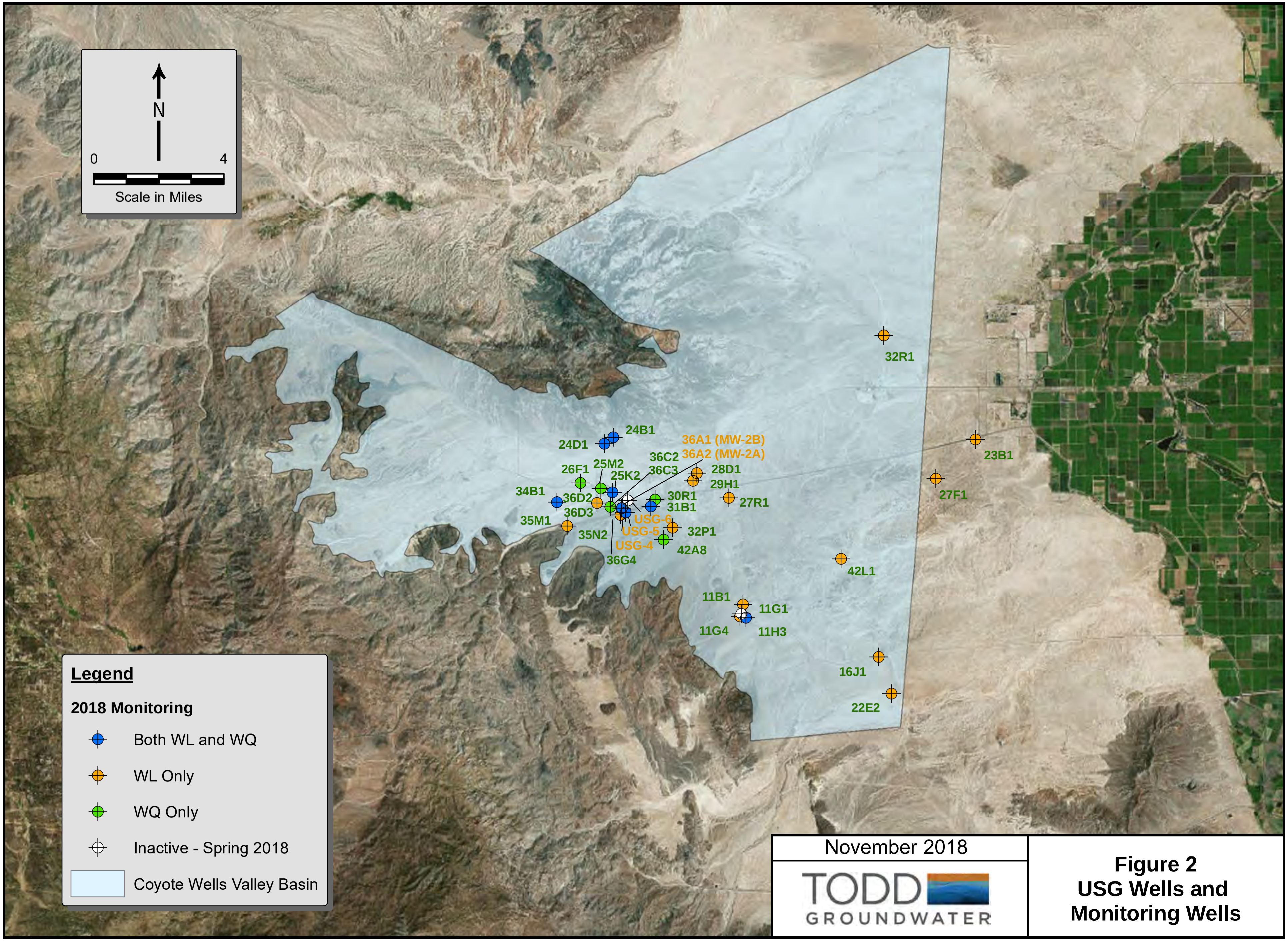
Calendar Year Pumping	Well #4	Well #5	Well #6	Total
2005	226	199	149	575
2006	199	188	162	549
2007	192	174	135	501
2008	140	136	125	400
2009	75	84	78	237
2010	78	82	79	239
2011	81	83	82	247
2012	69	109	70	248
2013	106	66	78	250
2014	98	59	82	239
2015	87	93	91	271
2016	115	118	106	339
2017	93	148	121	362



November 2018

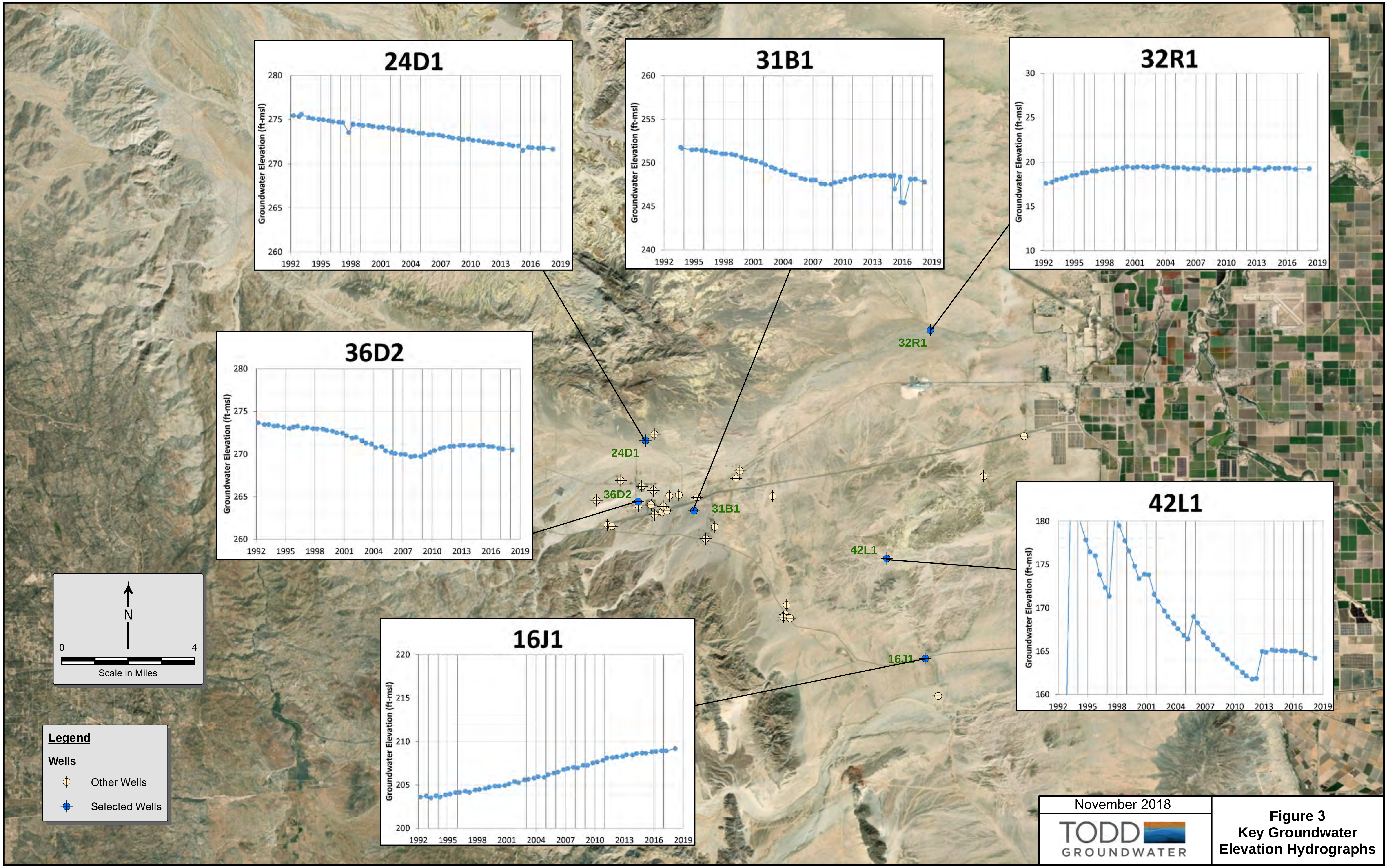
TODD GROUNDWATER

Figure 1
Groundwater Basin Boundary



November 2018

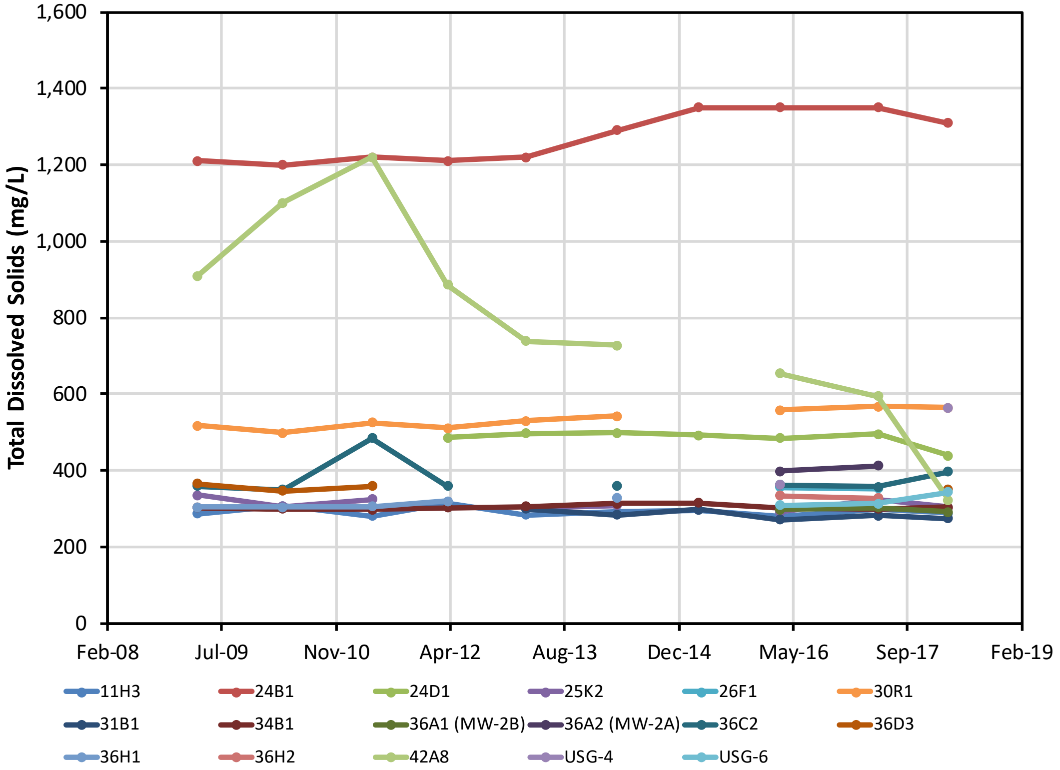
Figure 2
USG Wells and Monitoring Wells

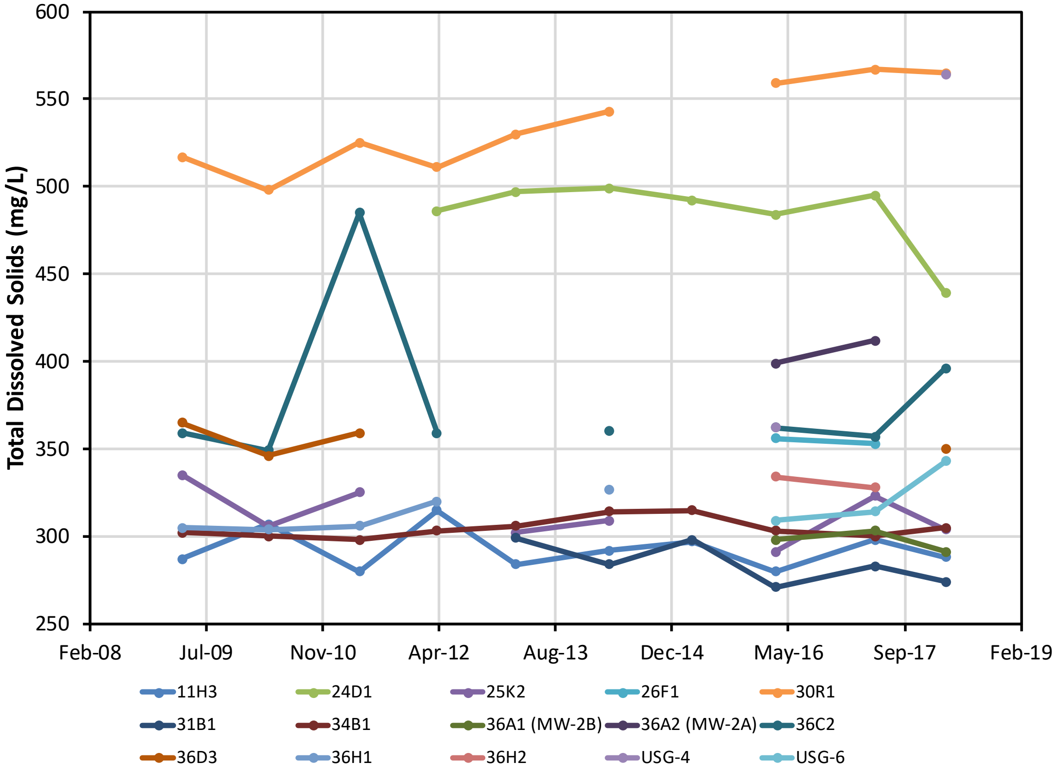


November 2018

TODD GROUNDWATER

Figure 3
Key Groundwater Elevation Hydrographs

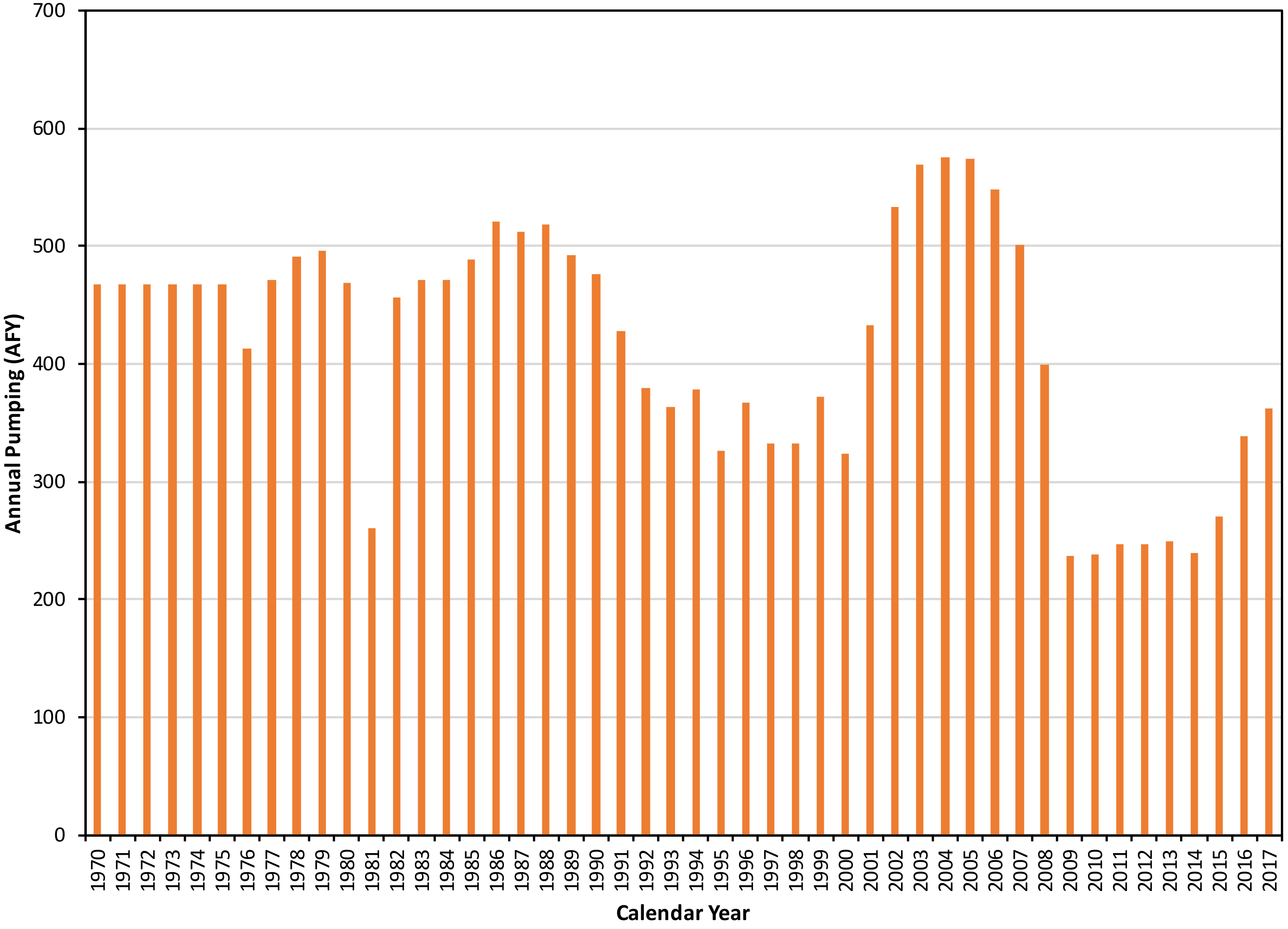




November 2018

TODD
GROUNDWATER

Figure 4
TDS
Concentrations
Over Time



November 2018

TODD GROUNDWATER

Figure 5
USG Plant
Annual Pumping

November 2018

TODD GROUNDWATER

Figure 6
Quarry Well Location

Attachment G: Final Subsequent Environmental Impact

RESOLUTION NO. ____

A RESOLUTION OF THE PLANNING COMMISSION OF THE COUNTY OF IMPERIAL, CALIFORNIA, APPROVING AND CERTIFYING THE FINAL PROJECT ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE U.S. GYPSUM PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

WHEREAS, a Final Subsequent Environmental Impact Report (SCH # 2001121133) and the California Environmental Quality Act (CEQA) Findings have been prepared in accordance with the requirements of CEQA, the State Guidelines, and the County's "Rules and Regulations to Implement CEQA as Amended"; and,

WHEREAS, the Planning Commission of the County of Imperial has been delegated with the responsibility of approving and certifying the Final Subsequent Environmental Impact Report (Final SEIR); and,

WHEREAS, public notice of said application has been given, and the Planning Commission has considered evidence presented by the Imperial County Planning & Development Services Department and other interested parties at a public hearing held with respect to this item on November 16, 2023 and,

NOW THEREFORE, the Planning Commission of the County of Imperial **DOES HEREBY RESOLVE** as follows:

SECTION 1. The Planning Commission has considered the proposed Final SEIR, Mitigation Monitoring and Reporting Program (MMRP), and CEQA Findings prior to making a decision to approve and certify the proposed Final SEIR and Findings of Fact. The Planning Commission finds and determines that the Environmental Impact Report is adequate and prepared in accordance with the requirements of CEQA, which analyzes environmental effects, based upon the following findings and determinations.

SECTION 2. That in accordance with State Planning and Zoning law and the County of Imperial regulations, the following findings for the approval and certification of the Final SEIR, MMRP and Findings of Fact has been made as follows:

1. That the Final SEIR (SCH# 2020120143), CEQA Findings for the United States Gypsum Plaster City Quarry Expansion and Well No. 3 Project (project) has been prepared in accordance with the requirements of the California Environmental Quality Act, the State CEQA Guidelines, and the County's "Rules and Regulations to Implement CEQA, as Amended."
2. That the County has reviewed, analyzed, and considered the Final SEIR, the environmental impacts therein identified for this project, the CEQA Findings, and the Mitigation Monitoring and Reporting Program, and the entire Record of Proceedings prior to approving this project.

3. That the Final SEIR, the CEQA Findings reflect the independent judgment of the County.
4. That the CEQA Findings are supported by substantial evidence and supported by information provided to the County by experts, including but not limited to the County staff and the EIR preparer, on whom the County relies.
5. That the County accept as its own, incorporate as if set forth in full herein, and make each and every one of the findings contained in the CEQA Findings, including feasibility of mitigation measures pursuant to Public Resources Code Section 21081(a)/CEQA Guidelines Section 15091.
6. That the MMRP is designed to ensure that during project implementation, the Operator and any other responsible parties implement the project components and comply with feasible mitigation measures identified in the CEQA Findings, the project entitlements, and the Mitigation Monitoring and Reporting Program and that these measures are fully enforceable through permit conditions, agreements, and/or other measures, such as their inclusion in the Mitigation Monitoring and Reporting Program.
7. That the project will not individually or cumulatively have an adverse effect on fish and wildlife resources, as defined in Section 711.2 of the Fish and Game Code.
8. That the Record of Proceedings consists of the Final SEIR (and all its technical reports and addendums thereto); the County staff reports; the CEQA Findings; the Mitigation Monitoring and Reporting Program; the various project entitlements and documents referenced therein; all final reports, applications, memoranda, maps, letters, and other planning documents prepared by the EIR planning/environmental consultant; all final reports, memoranda, maps, letters, and other planning documents prepared by the County staff; all documents submitted by members of the public and public agencies in connection with the Final SEIR; minutes and transcripts of all public meetings and public hearings; all written and verbal public testimony presented during a noticed public hearing for the proposed project which such testimony was taken and any and all other materials which constitute the record of proceeding pursuant to Public Resources Code Section 21167.6(e); and matters of common knowledge to the County staff, and Planning Commission, including, but not limited to the County General Plan, the County Land Use Ordinance, and County policies, which may be found during regular business hours at the Imperial County Planning & Development Services Department at 801 Main Street, El Centro, CA 92243.
9. That the Planning Commission does hereby certify the Final SEIR and CEQA Findings.

NOW, THEREFORE, based on the above findings, the Planning Commission of the County of Imperial **DOES HEREBY ADOPT AND APPROVE** the following:

1. Adopt the "CEQA FINDINGS for the FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT FOR THE PROJECT (SCH. No. 2001121133)" attached hereto as Exhibit A and incorporated by this reference; and
2. APPROVE AND CERTIFY the proposed Final SEIR (SCH# 2001121133) and CEQA Findings for the Project.

Rudy Schaffner, Chairperson
Imperial County Planning Commission

I hereby certify that the preceding resolution was taken by the Planning Commission at a meeting conducted on **November 16, 2023**, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

James A Minnick, Director of Planning & Development Services
Secretary to the Planning Commission

USG PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

CUP APPLICATION 20-0016

INITIAL STUDY IS 22-0021

FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT

Prepared By:

COUNTY OF IMPERIAL
Planning & Development Services Department
801 Main Street
El Centro, CA 92243
(442) 265-1736
www.icpds.com

NOVEMBER 2023

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CHAPTER 1: INTRODUCTION

1.1 OVERVIEW OF THE PROJECT AND ENVIRONMENTAL REVIEW PROCESS

This final subsequent environmental impact report (SEIR) has been prepared by Imperial County (County), the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.; California Code of Regulations [CCR] Title 14 Section 15000 et seq. [CEQA Guidelines]) pursuant to 14 CCR Section 15162, to evaluate the potentially significant environmental effects associated with the proposed USG Plaster City Quarry Expansion and Well No. 3 Project (proposed project).

The proposed project consists of approval of a Conditional Use Permit from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the United States Gypsum (USG) Plaster City Quarry (Quarry).

Additional land use entitlements from the County are not needed for mining and reclamation activities under the Quarry expansion. However, because Well No. 3 and the associated pipeline would provide water to support Quarry operations, this SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies.

This SEIR also evaluates potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (see Draft SEIR Appendix D-4). USG identified the approximately 207-acre Viking Ranch site for restoration and the 121-acre Old Kane Spring Road site for preservation to provide compensatory mitigation for the impacts to 139 acres of aquatic resources at the Quarry. Although the Viking Ranch restoration and Old Kane Spring Road preservation will not require entitlements from Imperial County, this SEIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA compliance analysis and mitigation for responsible and trustee agencies, including San Diego County, from which a Major Grading Permit will be requested.

A complete description of the proposed project is provided in Chapter 2, “Project Description,” of the Draft SEIR, which is available on the Imperial County Planning and Development Services Department website at: https://www.icpds.com/planning/environmental-impact-reports/draft-eirs. The Draft SEIR was circulated for public review and comment between April 18, 2023, and June 2, 2023 (State Clearinghouse Number 2001121133).

1.2 FINAL EIR REQUIREMENTS

This Final SEIR provides responses to comments received on the Draft SEIR. Section 15132 of the CEQA Guidelines requires that the Final SEIR consist of:

- The Draft SEIR or a revision of the draft;
- Comments and recommendations received on the Draft SEIR either verbatim or in summary;
- A list of persons, organizations, and public agencies commenting on the Draft SEIR;

- The responses of the Lead Agency to significant environmental points raised in the review and consultation process; and
- Any other information added by the Lead Agency.

This Final SEIR has been prepared to provide responses to comments received on the Draft SEIR and is to be used in conjunction with, rather than in place of, the Draft SEIR. Therefore, the information in this Final SEIR, which incorporates the Draft SEIR including its appendices, fulfills state and County CEQA requirements for a complete EIR.

Chapter 3, "Draft SEIR Errata," of this Final SEIR provides revisions for clarification or amplification of information in the record. In no instances do the errata provide substantial new information or indicate a new impact or increase in the severity of an impact identified in the Draft SEIR.

1.3 USE OF THE EIR IN THE DECISION-MAKING PROCESS

The SEIR is an informational document designed to inform the public of the significant environmental effects of a project, identify possible ways to minimize or mitigate the significant effects, and describe reasonable alternatives to the project.

The County will use the SEIR, together with economic, social, and technical information, to decide whether to approve the discretionary entitlements being requested. The County has made this Final SEIR available prior to hearings on proposed project approval or denial to provide an opportunity for agency and public review of the complete SEIR before decisions are made. In addition, the County provided responses to comments to each of the agencies and members of the public commenting on the Draft SEIR a minimum of 10 days before the first County Planning Commission hearing to consider certification of the Final SEIR.

The County reviews proposed mining use permits, reclamation plans, and financial assurance estimates before considering their approval. The proposed project would be regulated by the County in accordance with the *Imperial County Surface Mining and Reclamation Ordinance* and the California Surface Mining and Reclamation Act (PRC Section 2710 et seq.).

The SEIR (consisting of this Final SEIR and the Draft SEIR which is incorporated by reference) reviews the environmental consequences of the proposed project, as described in Chapter 4, "Environmental Analysis," of the Draft SEIR. The County will use the SEIR, along with other information, in its consideration of the conditional use permit application.

Before rendering decisions on the discretionary actions, the County must certify that:

- The SEIR has been completed in compliance with CEQA,
- The SEIR was presented to the decision-making body of the Lead Agency,
- The information in the SEIR was reviewed and considered before approving the project, and
- The SEIR reflects the Lead Agency's independent judgment and analysis.

Should the County approve the proposed project, a statement of findings would be adopted for each significant environmental impact of the proposed project, accompanied by a brief explanation of the rationale for each finding. The possible findings are:

- Changes or alterations have been required in, or incorporated into, the project to avoid or substantially lessen the significant environmental effects as identified in the Final SEIR;
- Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency; and/or
- Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the Final SEIR.

The Lead Agency must adopt, in conjunction with the findings, a program for reporting or monitoring the changes that it has either required in the project or made a condition of approval to avoid or substantially lessen impacts (CEQA Guidelines Section 15091[d]). These measures must be fully enforceable through conditions of approval, agreements, or other measures in a program referred to as the Mitigation Monitoring and Reporting Program (MMRP), which shall be prepared in advance of a public hearing on the proposed project.

1.4 SIGNIFICANT AND UNAVOIDABLE IMPACTS

The analysis determined that no environmental impacts would remain significant after implementation of all feasible mitigation. Thus, the County will not be required to adopt a statement of overriding considerations to approve the proposed project.

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CEQA PUBLIC REVIEW PROCESS

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CHAPTER 2:
CEQA PUBLIC REVIEW PROCESS

2.1 PURPOSE OF THE PUBLIC REVIEW

The California Environmental Quality Act (CEQA) Guidelines Section 15201 states:

> Public participation is an essential part of the CEQA process. Each public agency should include provisions in its CEQA procedures for wide public involvement, formal and informal, consistent with its existing activities and procedures, in order to receive and evaluate public reactions to environmental issues related to the agency's activities. Such procedures should include, whenever possible, making environmental information available in electronic format on the Internet, on a web site maintained or utilized by the public agency.

Imperial County (County) has invited public input during the Subsequent Environmental Impact Report (SEIR) preparation process, including providing opportunities to review and comment during the scoping process and during Draft SEIR circulation, as discussed further in Section 2.2, below.

CEQA (California Public Resources Code [PRC] Section 21082.2(b)) explains that "[s]tatements in an environmental impact report and comments concerning an environmental impact report shall not be determinative of whether the project may have a significant effect on the environment." According to CEQA, it is the responsibility of the lead agency decision makers to "determine whether a project may have a significant effect on the environment based on substantial evidence in the record." Substantial evidence is defined as facts, fact-related reasonable assumptions, and expert opinion. "Substantial evidence" does not include arguments, speculation, unsubstantiated opinion or narrative, clearly erroneous evidence, or socioeconomic impacts not related to the physical environment (PRC Sections 21080(e), 21082.2(a), 21082.2(c), and CEQA Guidelines Section 15384).

2.2 PUBLIC REVIEW PERIOD AND NOTIFICATIONS

In accordance with both the specific requirements and the intent of CEQA, the environmental review process for the proposed project has included substantial opportunities for public and agency review and comment on the environmental evaluations. The public review process for the proposed project SEIR has included the following opportunities:

- July 18, 2022, to August 22, 2022: SEIR public scoping and Notice of Preparation of SEIR review period
- August 11, 2022: Public scoping meeting for SEIR
- April 18, 2022, to June 2, 2022: 45-day Draft SEIR public review period
- November 16, 2023: Planning Commission hearing on the Draft SEIR

This Final SEIR or notices of its availability have been provided to commenting agencies, organizations, and individuals, and made available via the County website at: https://www.icpds.com/planning/environmental-impact-reports/draft-eirs or electronic form via USB prior to proposed project hearings before County decision makers. The County provided responses to comments to each of the agencies commenting on the Draft

SEIR a minimum of 10 days before the County Planning Commission hearing to consider certification of the Final SEIR.

2.3 SUMMARY OF PUBLIC INPUT AND APPROACH TO RESPONSES

Comments were received from four public agencies, one private organization, and one individual. Each comment set (i.e., letter or e-mail) is included in Appendix A, "Comments on the Draft SEIR," of this Final SEIR. A list of the agencies, organization and individual who submitted comments is provided in Table 4-1, "Comment Letters," in Chapter 4, "Response to Comments," of this Final SEIR.

Comments addressed a range of issues, including the content and analysis of the Draft SEIR. Comments addressing the adequacy of the SEIR or issues relevant to the environmental review included the following topics:

- Biological resources,
- Cultural Resources,
- Geology and soils,
- Hydrology and water quality,
- Utilities, and
- Project Alternatives

These comments were responded to with the level of detail appropriate to the comment and issue. In some cases, the County decided that it was appropriate to revise information in the Draft SEIR to correct, clarify, or amplify information. These revisions are presented as errata in Chapter 3, "Draft SEIR Errata," of this Final SEIR.

Some issues raised in the comments did not speak to the adequacy of the Draft SEIR or did not otherwise address environmental issues. These comments are included in the administrative record by virtue of their submittal to the County and will be considered by County decision makers. However, the Final SEIR need not, and does not, respond in detail to non-environmental issues raised in comments. Responses to these issues in this Final SEIR are limited to identifying that the comment does not raise an environmental issue and noting that decision makers will consider the issue separate from the environmental review process.

CHAPTER 3:
DRAFT SEIR ERRATA

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CHAPTER 3:
DRAFT SEIR ERRATA

3.1 OVERVIEW

In reviewing and responding to comments on the Draft SEIR, Imperial County (County) determined that revisions to portions of the Draft SEIR text were warranted to correct, clarify, or amplify certain information. CEQA Guidelines Section 15088 provides that where the response to comments makes important changes in the information contained in the text of the Draft SEIR, the lead agency should either revise the text in the body of the EIR or include marginal notes showing that the information is revised in the response to comments.

Section 3.2, "Errata," of this Final SEIR provides revisions to the Draft SEIR as deemed necessary based on consideration of issues raised in comments on the Draft SEIR. Revisions to the Draft SEIR text are shown as *errata*, consisting of an excerpt of the Draft SEIR text with changes represented with added text shown in underline (example) and deleted text show in strikethrough (~~example~~).

None of the changes provided in Section 3.2 of this Final SEIR contain significant new information. The inclusion of this information in the Final SEIR does not deprive the public of a meaningful opportunity to comment on a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect. The Final SEIR does not identify any new significant impacts or substantial increases in the severity of any environmental effects identified in the Draft SEIR. Therefore, recirculation of the Draft SEIR is not required (see CEQA Guidelines Section 15088.5).

Appendix B, "Mitigation Monitoring and Reporting Program," provides a Mitigation Monitoring and Reporting Program (MMRP) containing the final version of each impact statement and mitigation measure as provided in the SEIR.

3.2 ERRATA

This section contains errata to the Draft SEIR; each is preceded by a brief explanation of the purpose of the change to the Draft SEIR text.

3.2.1 Errata to Draft SEIR Table of Contents p. ix

Explanation

Revisions have been made to the Draft SEIR Table of Contents page ix to correct a minor typographical error and to reflect the addition of two technical reports and one set of figures to the Draft SEIR as Appendices D-5 through D-7, provided in Appendix C, "Draft SEIR Appendices Errata," of this Final SEIR.

ERRATA

VOLUME II: APPENDICES *(provided under separate cover)*

Appendix A: Initial Study and NOC/NOP

A-1: Initial Study
A-2: NOC/NOP
A-3: NOP and Scoping Meeting Comments

Appendix B: Application Materials

B-1: Imperial County Conditional Use Permit #08-0003
B-2: Application Letter

Appendix C: Air Quality Analysis

C-1: Air Quality Modeling Analysis
C-2: SEIS Air Emissions Estimates
C-3: Estimated Air Quality Emissions—Viking Ranch

Appendix D: Biological Resources Reports

D-1: SEIS Biological Resources Technical Report
D-2: 2016 Jurisdictional Delineation
D-3: Biological Opinion
D-4: Draft Habitat Mitigation and Monitoring Plan
D-5: Approved Jurisdictional Determination
D-6: Old Kane Springs Road Jurisdictional Delineation
D-7: Peninsular Bighorn Sheep Data Maps

END OF ERRATA

3.2.2 Errata to Draft SEIR Executive Summary p. ES-5

Explanation

Revisions have been made to Draft SEIR Executive Summary page ES-5 to clarify the full title of the Porter-Cologne Water Quality Control Act. Draft SEIR page ES-5, first paragraph, was revised as follows.

ERRATA

Project Objectives

The proposed project includes the following objectives:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;

2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
3) Meet market demands for gypsum products;
4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
5) Concurrently reclaim Quarry site for post-mining uses as Open Space;
6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter-Cologne Water Quality Control Act (Porter Cologne Act).

END OF ERRATA

3.2.3 Errata to Draft SEIR Executive Summary, p. ES-7

Explanation

Revisions have been made to Draft SEIR Executive Summary to clarify that the project alternatives were also evaluated in the 2019 SEIS. Draft SEIR page ES-7, first paragraph, was revised follows.

ERRATA

Summary of Alternatives

The alternatives evaluation considered several potential alternatives. Some were eliminated as they were determined to either not have the potential to feasibly achieve the basic project objectives and/or reduce significant project impacts. The following alternatives, which were evaluated in the 2019 SEIS, were selected and analyzed/compared to the project and are evaluated in the SEIR:

END OF ERRATA

3.2.4 Errata to Draft SEIR Executive Summary Table, p. ES-23

In response to comments, several mitigation measures have been revised to address comments made on the Draft SEIR. Tracked changed revisions to the mitigation measures can be found throughout Chapter 3. In addition, Appendix B provides a clean version of the currently proposed text for mitigation measures. The Errata to the Executive Summary is limited to two revisions that were made to add missing information and to fix a typographical error.

Explanation

Revisions have been made to the Draft SEIR Executive Summary Table to add missing text. Draft SEIR page ES-23 was revised as follows.

ERRATA

Impact 4.2-4: The Project Would Not Interfere Substantially with Native Wildlife Movement or Impede Nursery Site Use	PS	Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-8:*** *(See full text under Impact 4.2-2)* ***Mitigation Measure 3.4-12:*** *(See full text under Impact 4.2-2)*	LTS
Impact 4.2-5: The Project Would Not Conflict with Any Local Policies or Ordinances Protecting Biological Resources or with Any Adopted Habitat Conservation Plan or Natural Community Conservation Plan	PS	Implement the following existing mitigation measures from the 2008 EIR/EIS: ***Mitigation Measure 3.5-2:*** *USG comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.* Implement the following existing mitigation measures from the 2019 SEIS: ***Mitigation Measure 3.4-8:*** *(See full text under Impact 4.2-2)*	LTS

END OF ERRATA

3.2.5 Errata to Draft SEIR Executive Summary Table, p. ES-28

In response to comments, several mitigation measures have been revised to address comments made on the Draft SEIR. Tracked changed revisions to the mitigation measures can be found throughout Chapter 3. In addition, Appendix B, “Mitigation Monitoring and Reporting Program,” provides a clean version of the currently proposed text for mitigation measures. The Errata to the Executive Summary is limited to two revisions that were made to add missing information and to fix a typographical error.

Explanation

A revision has been made to the Draft SEIR Executive Summary Table to correct a typographical error. Draft SEIR page ES-28 was revised as follows.

ERRATA

Impact 4.6-4: The Project Could Release Pollutants in the Event of Inundation from Flood, Tsunami, or Seiche	LTS	None required.	LTS

END OF ERRATA

3.2.6 Errata to Draft SEIR Chapter 1, "Introduction," p. 1-1

Explanation

A revision has been made to Draft SEIR Chapter 1, "Introduction," to correct a typographical error. Draft SEIR page 1-1, first paragraph, was revised as follows.

ERRATA

This draft subsequent environmental impact report (SEIR) has been prepared by Imperial County (County), the lead agency under the California Environmental Quality Act (CEQA) (Public Resources Code [PRC], Section 21000 et seq.; California Code of Regulations [CCR] Title 14 Section 15000 et seq. [CEQA Guidelines]) pursuant to 14 CCR Section 15162, to evaluate the potentially significant environmental effects associated with United States Gypsum Company's ("USG" or "the applicant") request for a Conditional Use Permit (CUP) to develop Well No. 3 and an associated pipeline to support mining operations at the Plaster City Quarry (Quarry). In addition, this SEIR evaluates mining operations at the Quarry under the 2008 Quarry Expansion and restoration and preservation of two off-site properties (Viking Ranch restoration site and Old Kane Springs Road preservation site). Together these components make up the proposed project. A detailed description of the proposed project can be found in Chapter 2, "Project Description."

END OF ERRATA

3.2.7 Errata to Draft SEIR Chapter 1, "Introduction," p. 1-1

Explanation

Revisions have been made to Draft SEIR Chapter 1, "Introduction," to clarify that the aquatic resources identified on the project site are not Waters of the U.S. subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE).

ERRATA

In addition to the 2008 EIR/EIS, analysis of the USG Expansion/Modernization Project was completed under the National Environmental Policy Act (NEPA) as part of the process of obtaining the federal approvals required for the Quarry expansion. The NEPA process resulted in the completion of a Draft Supplemental EIR (SEIS) in June 2019 and a Final SEIS in November 2019 for the USG Expansion/Modernization Project. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of aquatic resources ~~waters of the United States~~ at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-top-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 207-acre area at the Viking Ranch restoration site and the preservation of approximately 121 acres at the Old Kane Springs Road preservation site.

END OF ERRATA

3.2.8 Errata to Draft SEIR Chapter 1, "Introduction," p. 1-6

Explanation

Revisions have been made to Draft SEIR Chapter 1, "Introduction," to clarify the list of potential responsible and trustee agencies for the proposed project. Draft SEIR page 1-6, last paragraph, was revised as follows.

ERRATA

A number of agencies may have a particular interest in the project. These agencies include those listed below:

Federal Agencies

- ~~United States Corps of Engineers (404 Permit)~~ None

State Agencies

- California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
- California Department of Parks and Recreation (Encroachment Permit)
- ~~Colorado River Regional Water Quality Control Board (401 Certification)~~

Regional and Local Agencies

- County of San Diego (Major Grading Permit)
- Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)

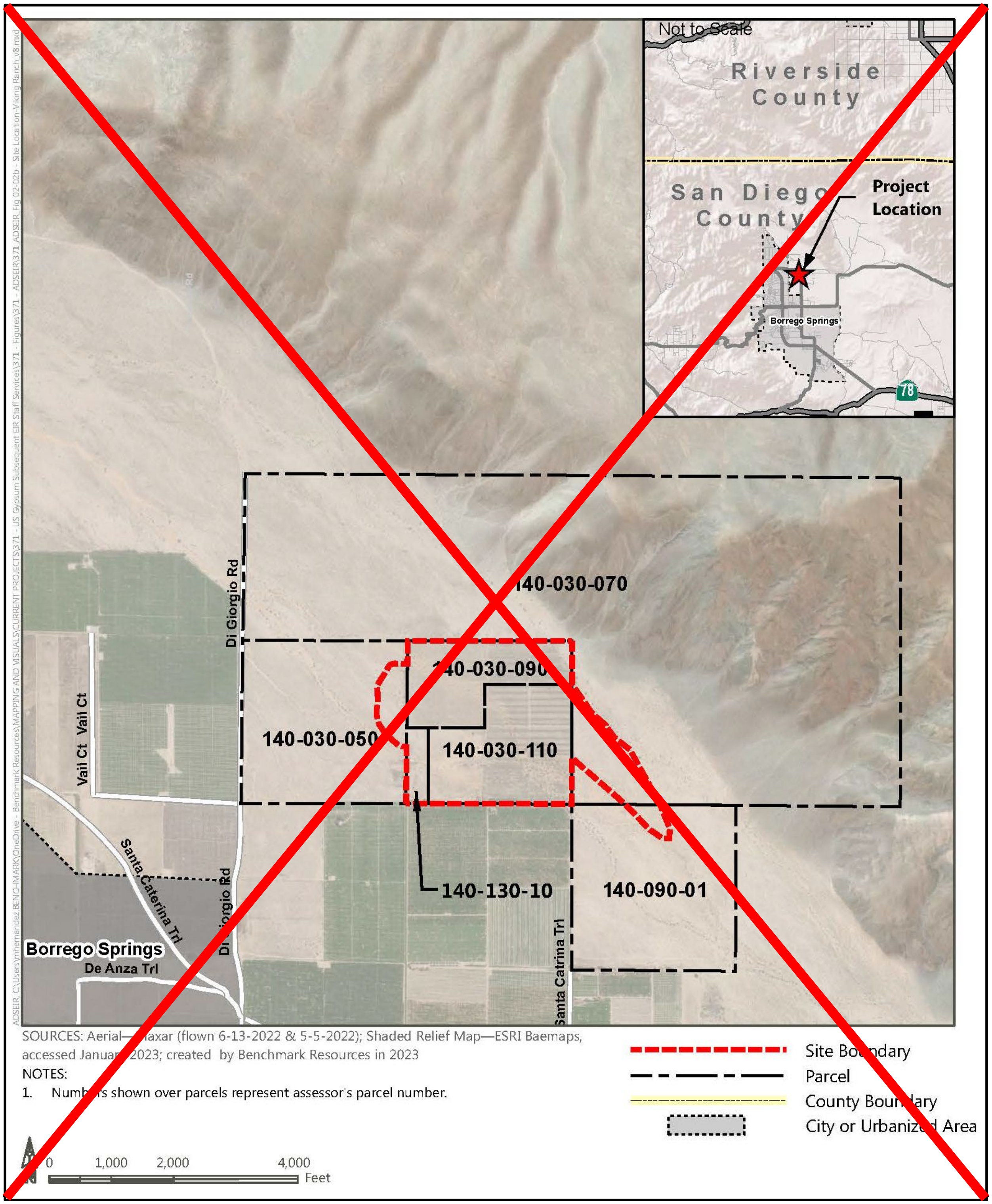
END OF ERRATA

3.2.9 Errata to Draft SEIR Chapter 2, "Project Description," p. 2-7

Explanation

Revisions have been made to Draft SEIR Chapter 2, "Project Description," Figure 2-2b to update all APNs within the Viking Ranch Restoration Site to follow San Diego County's APN numbering conventions.

ERRATA



SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

~~**SOURCE:** Benchmark Resources, 2023~~
~~**NOTE:** Image is not printed to scale.~~

Draft SEIR Figure 2-2b
Site Location—Viking Ranch Restoration Site

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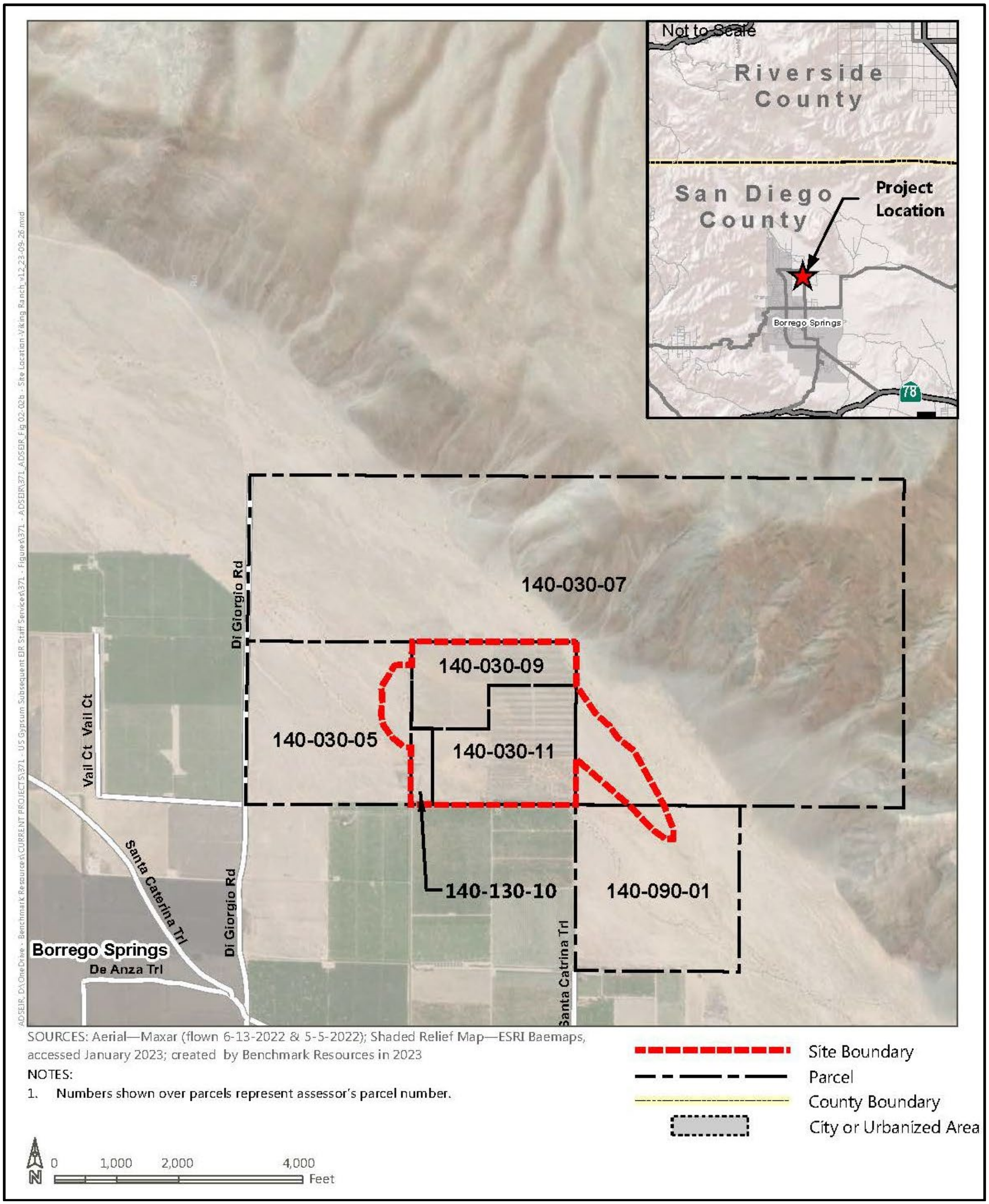

SOURCES: Aerial—Maxar (flown 6-13-2022 & 5-5-2022); Shaded Relief Map—ESRI Baemaps, accessed January 2023; created by Benchmark Resources in 2023

NOTES:

1. Numbers shown over parcels represent assessor's parcel number.

SOURCE: Benchmark Resources, 2023
NOTE: Image is not printed to scale.

Final SEIR Errata Figure 2-2b
Site Location—Viking Ranch Restoration Site

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END OF ERRATA

3.2.10 Errata to Draft SEIR Chapter 2, “Project Description,” p. 2-11 and 2-12

Explanation

Revisions have been made to Draft SEIR Chapter 2, “Project Description,” to correct an incorrect assessor’s parcel number (APN), to update all San Diego County APNs to reflect the County’s numbering conventions, and to add missing information. Draft SEIR page 2-11, third paragraph and page 2-12, Table 2-1, were revised as follows.

ERRATA

2.5.1 Project Location and Access

The USG Plaster City Quarry holdings consists of 2,048 acres and is in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line (see Figure 2-1 and Figure 2-2a). Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (Assessor’s Parcel Number [APN] 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30 foot wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. The approximately 207-acre Viking Ranch restoration site (see Figure 2-2b) is located 26 miles northwest of the USG Quarry in San Diego County (APNs 140-0~~3~~90-01~~-00~~, 140-030-05~~-00~~, -07~~-00~~, -09~~-00~~, -10~~-00~~, and -11~~-00~~). The 121-acre Old Kane Springs Road preservation site (see Figure 2-2c) is located 7 miles northwest of the USG Quarry in San Diego County (APN 253-150-34~~-00~~).

The Quarry, well site, and pipeline alignment are accessed via West Evan Hewes Highway. Viking Ranch is accessed on an unpaved easement that proceeds east from the northern extension of De Gregorio Road in Borrego Springs, California. The Old Kane Springs Road preservation site is accessed via the unpaved Old Kane Springs Road off Highway 78 or Split Mountain Road in Ocotillo Wells, California.

2.5.2 Assessor Parcel Numbers

The project site’s assessor parcels are listed in Table 2-1, “Assessor’s Parcel Numbers.”

TABLE 2-1
ASSESSOR’S PARCEL NUMBERS

Assessor’s Parcel Numbers	Ownership	Acres (Approximate)[1]	Zoning
IMPERIAL COUNTY			
	Well No. 3 Site		
033-020-009	USG	159.9	S-2
	Pipeline Alignment		
033-010-016	State	17.0	STATE
033-010-017	BLM	12.6	BLM

Assessor's Parcel Numbers	Ownership	Acres (Approximate)[1]	Zoning
033-010-025	BLM	18.1	BLM
033-060-008	USG	388.6	S-2
033-060-010	USG	80.3	S-2
033-060-012	BLM	1.2	BLM
USG Plaster City Quarry			
033-060-009	USG	40.0	S-2
033-070-010	USG	80.0	S-2
033-070-004	USG	37.2	S-2
033-070-005	USG	159.0	S-2
033-070-008	USG	69.0	S-2
033-070-010	USG	80.0	S-2
033-070-011	USG	108.7	S-2
033-070-017	USG	32.6	S-2
033-070-023	USG	11.4	S-2
033-080-005	USG	37.9	BLM
033-090-011	USG	10.4	S-2
033-090-012	USG	70.0	S-2
033-090-013	USG	37.6	BLM
033-090-014	USG	42.2	BLM
033-090-015	USG	122.0	BLM/S-2
	Subtotal	**2,048**	
SAN DIEGO COUNTY			
Viking Ranch Restoration Site			
~~140-030-01-00~~140-090-01	State Park	4.8	n/a[3]
140-030-05~~-00~~	Anza-Borrego Foundation	12.3	8
140-030-07~~-00~~	State Park	26.5	n/a[3]
140-030-09~~-00~~	Borrego Water District	62.5	n/a[3]
140-030-10~~-00~~	Private	9.8	8
140-030-11~~-00~~	Borrego Water District	87.5	n/a[3]
	Subtotal	**207[2]**	
Old Kane Springs Road Preservation Site			
253-150-34~~-00~~	Private	121	8
	TOTAL:	2,376	

Source: Imperial County 2022b
Notes: 1—Portion of parcel within project area; 2—does not add due to independent rounding; 3—parcels are federal or state land and not subject to County zoning

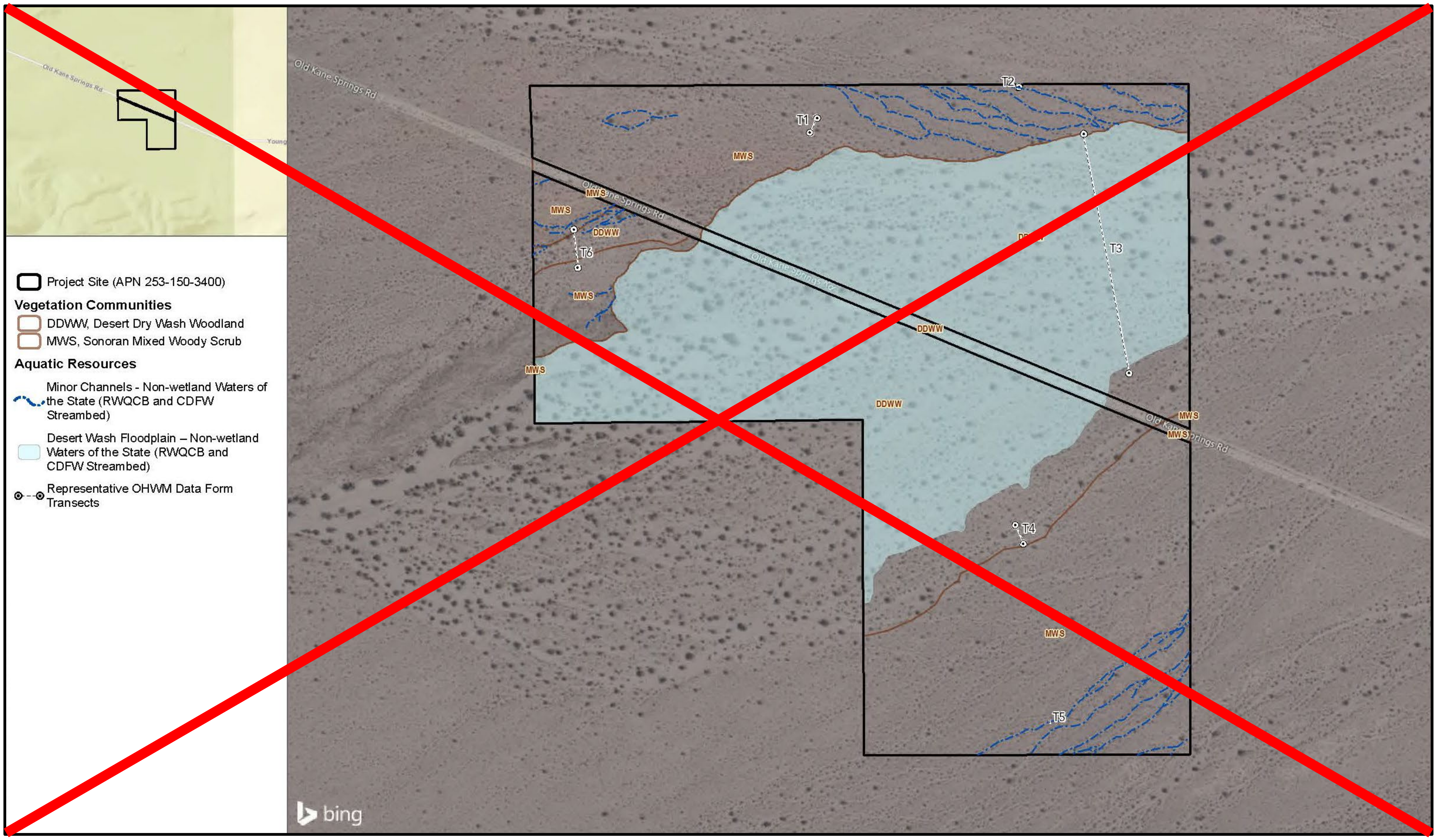
END OF ERRATA

3.2.11 Errata to Draft SEIR Chapter 2, "Project Description," p. 2-15

Explanation

Revisions have been made to Draft SEIR Chapter 2, "Project Description," to replace Figure 2-4 with a clearer image. Draft SEIR page 2-15, Figure 2-4, was revised as follows.

ERRATA



~~**SOURCE:** Dudek, 2021; Aerial-Bing Mapping Services, 2020~~
~~**NOTE:** Image has been modified by Benchmark Resources and is not printed to scale.~~

Draft SEIR Figure 2-4
Old Kane Springs Road Preservation Site

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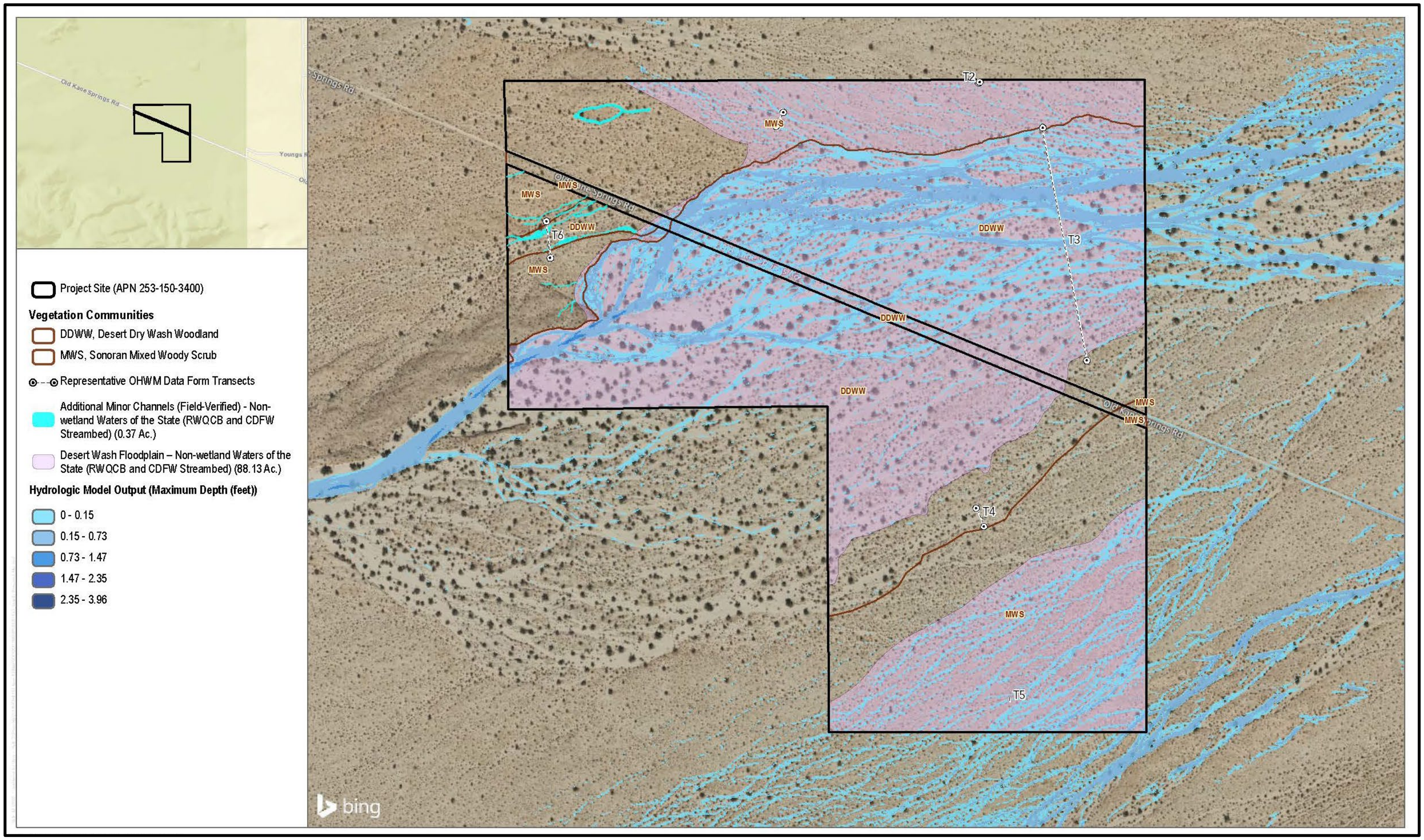

SOURCE: Dudek, 2023; Aerial-Bing Mapping Services, 2020
NOTE: Image has been modified by Benchmark Resources and is not printed to scale.

Final SEIR Errata Figure 2-4
Old Kane Springs Road Preservation Site

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END OF ERRATA

3.2.12 Errata to Draft SEIR Chapter 2, "Project Description," p. 2-24

Explanation

Revisions have been made to Draft SEIR Chapter 2, "Project Description," to add a reference to the associated figure. Draft SEIR page 2-25, third paragraph, was revised as follows.

ERRATA

Viking Ranch Restoration

The Viking Ranch parcels were primarily former orchard land located north of Borrego Springs and within the Coyote Creek Wash (see Figure 2-1). However, parcel 140-030-10~~-00~~ and the southwestern portion of parcel 140-030-11~~-00~~ are undeveloped and were not historically in agriculture. The mitigation site is located approximately 26 miles from the USG Quarry. Viking Ranch was used for orchard production until the site was purchased by the Borrego Water District in 2017. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The restoration program will remove these diversion features to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain. The restoration program is described in the Draft Habitat Mitigation and Monitoring Plan for the United States Gypsum Company Plaster City Expansion/Modernization Project (HMMP) (see Appendix D-4) and is shown in Figure 2-6.

END OF ERRATA

3.2.13 Errata to Draft SEIR Chapter 2, "Project Description," p. 2-26

Explanation

Revisions have been made to Draft SEIR Chapter 2, "Project Description," to clarify that the two oil-filled plastic containers once identified on the project site are no longer present. Draft SEIR p. 2-25, first paragraph, was revised as follows.

ERRATA

A Preliminary Environmental Site Assessment Report (ESA) (Dudek 2018, cited in Dudek 2022) was conducted on the site that included the collection of 10 soil samples that were analyzed for organochlorine pesticides. No organochlorine pesticides were detected at or above the above reporting limits in any of the 10 samples analyzed. The ESA includes the following recommendations to address potential hazards and hazardous materials concerns on the site:

- Two oil filled plastic containers were observed on the site and have since been ~~should be~~ removed and properly disposed of in accordance with applicable local, state, and federal guidelines.
- Stained soil was observed on the site near a cement platform located in the southwest corner of the site. The stained soil should be removed and disposed of in accordance with applicable local, state, and federal guidelines.

- A water well was located on the site. If the owner of the site plans to use the well in the future, the well should be capped with a lockable lid. If no future use of the well is planned, the turbine discharge head and impeller shaft should be removed, and the well should be abandoned in accordance with local, state, and federal guidelines. Alternatively, the well may be converted to a monitoring well.

Surface water was observed flowing on the site from the adjacent property to the south. The source of the surface water should be identified. The surface water should then be prevented from entering the site or rerouted off of the site. Surface water from unknown sources has the potential to carry contamination onto the site.

END OF ERRATA

3.2.14 Errata to Draft SEIR Chapter 2, “Project Description,” p. 2-28

Explanation

Revisions have been made to Draft SEIR Chapter 2, “Project Description,” to add a description of the proposed actions related to the Old Kane Springs Road preservation site. Draft SEIR page 2-28, sixth and seventh paragraphs, were added as follows.

ERRATA

Old Kane Springs Road Preservation

The project proposes the preservation of existing non-wetland waters desert wash, braided channels, fluvial process, and associated vegetation and wildlife within the 121-acre Old Kane Springs Road preservation site. The preservation site is a privately owned parcel located approximately 3 miles southwest of Ocotillo Wells and 10 miles northwest of the Quarry project. The parcel is bisected by Old Kane Springs Road and an associated overhead power transmission line supported by wooden poles. The property is situated within an unnamed desert and all of the property is subject to flow during episodic rainfall events. Fluvial features are present in all areas of the property except for the maintained unpaved roadway. However, fluvial drainage patterns are not interrupted by the road, suggesting that during flood events, the road does not pose an impediment to flow. At least 61 acres of the preservation site are jurisdictional non-wetland waters of the State. The vegetation communities consist of Sonoran mixed woody scrub and desert dry wash woodland with little non-native species. The property is zoned for low density residential development (one unit/40 acres) and therefore the property is under threat of development. The preservation site boundaries will be surveyed, posted with signage indicating the area is a natural open space preserve and that trespassing is not allowed. A fence is not proposed because the area is surrounded by public open space lands on all sides with restricted access. A locked gate will be installed across access roads into the site to restrict vehicular access to the preservation site. The preservation site will be managed by a qualified long-term (in-perpetuity) natural lands manager. The identification of the long-term manager would be subject to regulatory agency approval.

Preservation Mechanism

Both the Viking Ranch restoration site and Old Kane Springs Road Preservation site will be preserved in-place via recordation of a permanent conservation easement, deed restriction, or other approved protective mechanism over the entire restoration site and preservation site, which will promote long-term viability of the sites' waters of the State and surrounding habitat by conducting long-term management. The conservation easement shall prohibit all residential, commercial, industrial, institutional, and transportation development, and any other infrastructure development that would not maintain or enhance the natural functions and values of the preservation site. Utility lines, sewer lines, drainage lines, access roads, and other passive and/or active recreation areas shall not be allowed in the sites where these easements/uses do not currently exist. For instance, as shown on Draft SEIR Figure 2-4, "Old Kane Springs Road Preservation Site," a utility easement and contiguous access road bisect the Old Kane Springs Road preservation site and would remain after preservation. Freestanding gates and signage would be installed at the site access points within this existing easement.

END OF ERRATA

3.2.15 Errata to Draft SEIR Chapter 2, "Project Description," p. 2-31

Explanation

Revisions have been made to Draft SEIR Chapter 2, "Project Description," to clarify that a major grading permit will be required from San Diego County for the Viking Ranch Restoration Site and to add the California Department of Parks and Recreation as an agency whose approval may be required for the project. Draft SEIR page 2-31, first and second paragraphs, were revised as follows.

ERRATA

This SEIR also evaluates potential environmental impacts associated with the Viking Ranch restoration and Old Kane Springs Road preservation actions, as proposed in the Habitat Mitigation and Monitoring Plan (Dudek 2022). Although these project components do not require entitlements from Imperial County, this SEIR evaluates the environmental impacts of these actions for full disclosure and to provide the appropriate CEQA review for responsible agencies, which will include major grading permits issued by San Diego County for Viking Ranch.

2.7.2 Other Agencies Whose Approval May Be Required

In addition to Imperial County approval, other permits and approvals would be required before implementation of the project could proceed. The other agencies whose approval may be required include:

- County of San Diego (Major Grading Permit)
- California Department of Fish and Wildlife (Lake and Streambed Alteration Agreement)
- Colorado River Regional Water Quality Control Board (Construction General Permit Notice of Intent [NOI], Industrial General Permit NOI, Waste Discharge Requirements)
- California Department of Parks and Recreation (Encroachment Permit)

END OF ERRATA

3.2.16 Errata to Draft SEIR Chapter 3, "Terminology, Approach, and Assumptions," p. 3-5

Explanation

Revisions have been made to Draft SEIR Chapter 3, "Terminology, Approach, and Assumptions," to clarify that the aquatic resources identified on the project site are not Waters of the U.S. subject to the jurisdiction of the USACE. Draft SEIR page 3-5, last paragraph, was revised as follows.

ERRATA

The requested CUP would replace expired CUP 635-83, and development of Well No 3 and associated pipeline would be essentially unchanged from that previously proposed and analyzed in the 2008 EIR/EIS. However, the current proposal includes additional project components which were not part of the original 2008 Quarry expansion. The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of ~~waters of the United States (WoUS)~~aquatic resources at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of an approximately 207-acre area at the Viking Ranch restoration site and the preservation of approximately 121 acres at the Old Kane Springs Road preservation site. The sites are shown on Figures 2-1, "Regional Location," 2-2b, "Site Location—Quarry, Well No. 3, and Pipeline," and 2-2c, "Site Location—Viking Ranch Restoration Site." These activities could result in one or more significant effects not discussed in the previous EIR. Thus, the County has determined that an SEIR is required for this project. This SEIR is subsequent to the 2008 EIR/EIS.

END OF ERRATA

3.2.17 Errata to Draft SEIR Chapter 3, "Terminology, Approach, and Assumptions," p. 3-9

Explanation

Revisions have been made to Draft SEIR Chapter 3, "Terminology, Approach, and Assumptions," to clarify that some previously adopted mitigation measures referenced in the Draft SEIR have already been partially or fully implemented. Draft SEIR page 3-9, first paragraph, was revised as follows.

ERRATA

3.5 MITIGATION MEASURES

In most cases, implementation of recommended mitigation measures would either result in complete avoidance of impacts or reduce impacts to less than significant. However, impacts that cannot be reduced to a less-than-significant level after application of feasible mitigation measures and alternatives are considered significant and unavoidable. As a condition of project approval, the applicant for the proposed project would be required to implement all the feasible mitigation measures identified in this EIR and adopted by the County.

In accordance with PRC Section 21081.6(a), the County would adopt a mitigation monitoring and reporting program (MMRP) at the time it certifies the EIR. The purpose of the MMRP is to ensure that the applicant will comply with the adopted mitigation measures when the project is implemented. The MMRP would identify each of the mitigation measures and describe the party responsible for monitoring, the time frame for implementation, and the program for monitoring compliance. The proposed project was originally approved in 2008 and has been partially implemented. As such, some of the mitigation measures contained in the 2008 EIR/EIS and identified in this Draft SEIR as existing mitigation measures, have already been fully implemented and need not be implemented again. The current status of each mitigation measure will be clearly denoted in the MMRP.

END OF ERRATA

3.2.18 Errata to Draft SEIR Section 4.1, "Air Quality," p. 4.1-21

Explanation

Revisions have been made to Draft SEIR Section 4.1, "Air Quality," to clarify the nature of truck trips to/from the Old Kane Springs Road preservation site. Draft SEIR page 4.1-21, third paragraph, was revised as follows.

ERRATA

Old Kane Springs Road Preservation Site

Emissions associated with preservation of the Old Kane Springs Preservation Site would be limited to ~~regular maintenance~~ infrequent truck trips for periodic site monitoring and would be negligible. Thus, this project component would not hinder implementation of the SDAPCD air quality plans and would have no potential to cause unplanned growth.

END OF ERRATA

3.2.19 Errata to Draft SEIR Section 4.1, "Air Quality," p. 4.1-24

Explanation

Revisions have been made to Draft SEIR Section 4.1, "Air Quality," to clarify that Mitigation Measure 4.1-1a applies only to the Viking Ranch Restoration Site. Draft SEIR page 4.1-24, Mitigation Measure 4.1-1a, was revised as follows.

ERRATA

Mitigation Measure 4.1-1a: *The following standard mitigation measures for fugitive PM_{10} control shall be implemented throughout project construction activities at the Viking Ranch Restoration Site:*

a. *All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.*

b. *All on site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*

c. *All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*

d. *The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.*

e. *All track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.*

f. *Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at point of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line. g. The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.*

END OF ERRATA

3.2.20 Errata to Draft SEIR Section 4.1, "Air Quality," p. 4.1-25

Explanation

Revisions have been made to Draft SEIR Section 4.1, "Air Quality," to clarify that Mitigation Measure 4.1-1b applies only to the Viking Ranch Restoration Site. Draft SEIR page 4.1-25, Mitigation Measure 4.1-1b, was revised as follows.

ERRATA

Mitigation Measure 4.1-1b: *The following standard mitigation measures for construction combustion equipment shall be implemented throughout project construction activities at the Viking Ranch Restoration Site:*

a. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.*

b. *Minimize idling time either by shuttling equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*

c. *Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.*

d. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

END OF ERRATA

3.2.21 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-1

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to add reference to the Approved Jurisdictional Determination for the Quarry issued by the USACE and the updated Jurisdictional Delineation for the Old Kane Springs Road preservation site. Draft SEIR page 4.2-1, third paragraph, was revised as follows.

ERRATA

The information in this section is based on the following biological technical studies which were previously prepared to support the 2008 EIR/EIS and 2019 SEIS, as well as a habitat mitigation and monitoring plan prepared for the offsite mitigation sites:

- *Biological Resources Technical Report: United States Gypsum Company Expansion and Modernization Project* (Aspen Environmental Group 2019) (Appendix D-1, “SEIS Biological Resources Technical Report”)
- *Jurisdictional Delineation for United States Gypsum Company Plaster City Expansion/Modernization Project* (Hernandez Environmental Services 2016) (Appendix D-2, “2016 Jurisdictional Delineation”)
- *Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California* (United States Fish and Wildlife Service 2019) (Appendix D-3, “Biological Opinion”)
- *Draft Habitat Mitigation and Monitoring Plan for the United States Gypsum Company Plaster City Expansion/Modernization Project, Ocotillo Wells, California* (Dudek 2021) (Appendix D-4, “Draft Habitat Mitigation and Monitoring Plan”)
- *Approved Jurisdictional Determination, issued by the USACE on February 8, 2021* (USACE 2021) *(Appendix D-5, “Approved Jurisdictional Determination”)*
- *Initial Jurisdictional Aquatic Resources Delineation Findings: Old Kane Springs Road (Dudek 2022) (Appendix D-6, “Old Kane Springs Rd Jurisdictional Delineation”)*

END OF ERRATA

3.2.22 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-16

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to insert additional data and figures on PBS provided to Imperial County by CDFW via email on August 17 and August 24, 2023 (see Comment Letters 4b and 4c, respectively in Chapter 4, “Response to Comments,” of this Final SEIR). See also Draft SEIR Appendix D-7, provided in Appendix C, “Draft SEIR Appendices Errata,” of this Final SEIR. The following new text has been added after the sixth paragraph of Draft SEIR page 4.2-16.

ERRATA

According to CDFW, based on GPS data collected between 2015 and 2022, PBS do not use the active mining area in the north half of the Quarry but do utilize the currently undisturbed habitat within the proposed mine expansion area to the south. While the gypsum formations within the southern quarry boundary do not appear to be used much by PBS, clusters of location data surrounding the margins of the formations indicate that these areas do meet PBS needs (PCEs) particularly during the lamb-rearing and summer seasons (refer to close-up maps by season provided in Appendix D-7). Clusters of PBS data surrounding the gypsum formations and within the wash below the formations are most notable during the summer months (June – August). The drainages wrap around the formations and provide ephemeral water sources, and in times of drought provide forage opportunities since plants grow more readily in drainages and washes compared to the steep, rocky slopes above the formations. The washes do not make up “core PBS habitat” based on radio-collar data; however, at certain times of the year, the washes and drainages provide critical resources for PBS and are therefore just as important to survival as more frequently used areas. Furthermore, in practice, the gypsum formations next to the washes provide shade, shelter, and escape terrain regardless that it does not meet the strict definition of “escape terrain” previously described in this Draft SEIR. There are no permanent water sources within the Fish Creek Mountains (FCM), yet despite this fact, radio-collared data collected from 2015 through May 2022 had not shown any movement of FCM ewes out of the area. However, in July 2022, one radio-collared ewe did move into the Coyote Mountains (south of the FCM) for a few days before returning to the FCMs. Due to the lack of permanent water sources in the FCM, small drainages that can collect and store water even for short periods of time and sustain plant growth are vital.

Radio-collared ewes do utilize the project area during the lamb-rearing season, and it is important to emphasize that the points on the map do not represent all movement data of radio-collared ewes since GPS data are only collected a few times per day, and the data only represent a small portion of the total ewe population and thus far no representation of ram use. Because there is radio-collared data within the project area during the lamb-rearing season, it is considered lamb-rearing habitat even if it doesn’t meet the definition described in the USFWS Recovery Plan. A study conducted for CDFW by a graduate student (Kendall Hines), titled “Post-partum habitat use for Peninsular bighorn sheep (Ovis canadensis nelsoni) in Southern California, demonstrated that 3 of the 4 ewe groups studied moved closer to alluvial fan habitat during the post-partum period and that 2 of 4 ewe groups moved to lower elevation habitat. While the study was not conducted in the FCM, data indicate that ewes in the FCM also rely on low elevation habitat near alluvial fans during the lambing season.

Appendix D-7 provides multiple CDFW figures that display PBS radio-collar location data in the project area between 2015 and 2021.

END OF ERRATA

3.2.23 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-27

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to clarify the regulatory setting for drainages identified within the proposed pipeline alignment. Draft SEIR page 4.2-27, third paragraph, was revised as follows.

ERRATA

According to the 2019 SEIS, there are no jurisdictional wetlands present within the proposed pipeline alignment. However, there are a few drainage courses along the alignment that would likely meet criteria as state jurisdictional ephemeral stream channels, subject to permitting under Section ~~16013~~1602 of the Fish and Game Code, and~~ possibly~~ as waters of the ~~US ~~State subject to permitting under the Porter-Cologne Act ~~Section 404 of the Federal Clean Water Act (Imperial County 2019)~~.

END OF ERRATA

3.2.24 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-30

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to clarify the regulatory setting for aquatic resources identified on the project site. Draft SEIR page 4.2-30, sixth paragraph, was revised as follows.

ERRATA

> Pursuant to the ~~federal Clean Water Act, ACOE and RWQCB, ~~Porter-Cologne Act, RWQCB jurisdictional areas include those supporting all three wetlands criteria consistent with and as identified ~~described~~ in the USAC~~O~~E manual: hydric soils, hydrology, and hydrophytic vegetation.~~ Areas regulated by the RWQCB are generally coincident with the ACOE but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act.~~

END OF ERRATA

3.2.25 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-30

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to replace references to Waters of the U.S. with Waters of the State. Draft SEIR page 4.2-30, last paragraph, was revised as follows.

ERRATA

- ~~ACOE and ~~RWQCB: "Wetland" and "non-wetland waters." Wetland waters of the State ~~United States~~ and non-wetland waters of the State ~~United States~~ are subject to regulation by ~~ACOE and ~~RWQCB, pursuant to the Clean Water Act.~~ Within the mitigation site, ACOE waters of the~~

~~United States, and RWQCB waters of the United States overlap, and therefore are combined under one term: “non-wetland waters.”.~~

END OF ERRATA

3.2.26 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-32

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to correct an incorrect acreage total. Draft SEIR page 4.2-3, Table 4.2-3, was revised as follows.

ERRATA

Table 4.2-3
Vegetation Communities within the Old Kane Springs Road Preservation Site Vegetation

Vegetation Class	Vegetation Type	Total (Acres)
Scrub and Chaparral	Sonoran Mixed Woody Scrub1	59~~0~~.55
Riparian and Bottomland Habitat	Desert Dry Wash Woodland1	60.08
	Total^2	**119.63**

Source: Oberbauer et al. 2008, cited by Dudek 2021
Notes:
1. Considered special status by the County (2010)
2. Totals may not sum due to rounding.

END OF ERRATA

3.2.27 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-33 and 4.2-34

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to update the discussion of aquatic jurisdictional resources on the Old Kane Springs Road Preservation Site according to the updated Jurisdictional Aquatic Resources Delineation (Dudek 2022) and to remove mention of the USACE from Table 4.2-4. Draft SEIR page 4.2-34, Table 4.2-4, was revised as follows.

ERRATA

Aquatic Jurisdictional Resources

A jurisdictional wetland delineation was conducted for the Old Kane Springs Road site to determine the presence and extent of jurisdictional aquatic features on the project site (Dudek 2021; see Appendix E of Appendix D-4). This delineation was updated by Dudek in 2022 (see Appendix D-6). During the jurisdictional delineation survey, the site was walked by Dudek biologists and evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of potential jurisdictional aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity (Dudek 202~~1~~2).

Since no hydrophytic vegetation and/or associated wetlands were present on the Old Kane Springs Road ~~Viking Ranch~~ site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel (Dudek 202~~1~~2).

Non-wetland Waters of the State

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels within the desert dry wash woodland vegetation community. This wash was mapped from bank to bank to include all low-flow channels within its banks as one large non-wetland water. Additionally, several smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. Additionally, a few smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub outside of larger floodplains were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features on the Old Kane Springs Road ~~Viking Ranch~~ site deemed to be potentially jurisdictional by Dudek biologists are shown on Figure 2-4.

In general, nearly all the field-mapped non-wetland water and low-flow channel boundaries (mapped based on evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks) fell within the maximum flow areas generated through the hydrologic model. The northern and southernmost portions of the site, outside of the central wash, showed more inconsistent and less-pronounced fluvial and OHWM indicators in the field; hydrologic modeling was used to refine the extent of non-wetland water boundaries within the site. Figure 2-4 displays the boundaries of hydrologically modeled and field-verified non-wetland waters on the site and likely corresponds to accurate surface flow areas across the site during a significant runoff event.

Non-wetland waters on site are ephemeral, meaning they only flow during storm events. ~~These features were mapped because they had evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks.~~ These features are ~~classified as non-wetland waters and are~~ likely regulated by RWQCB and CDFW as waters of the state (Dudek 2022~~1~~).

Swales

Several potential swale features without well-defined banks are ~~may~~ present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may or may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but typically fell within the main floodplains of the mapped extent of non-wetland waters. ~~may be considered jurisdictional upon agency review; they can be added to the map using aerial signatures at a later date if needed.~~

Results of the jurisdictional delineation are summarized in Table 4.2-4, “Jurisdictional Resources within the Old Kane Springs Road Preservation Site,” and on Figure 2-4.~~5, “Plaster City Quarry Plan.”~~ There are approximately 88.5~~60.99~~ acres of ~~RWQCB jurisdictional~~ non-wetland waters present~~ both~~ inside~~ and outside of alluvial fan/wash and outside of~~ alluvial fan wash.

Table 4.2-4
Jurisdictional Resources within the Old Kane Springs Road Preservation Site

Type	Jurisdiction	Acres/Linear Feet
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQB	~~59.76~~88.5/13,950
~~Non-Wetland Waters of the State (Outside of Alluvial Fan/Wash)~~	~~CDFW and RWQB~~	~~1.23~~
Total Potential Jurisdictional Aquatic Resources ~~**ACOE/RWQB Non-Wetland Waters and CDFW Streambeds**~~[1]		**88.5/13,950** ~~**60.99**~~

Source: Dudek 2022~~1~~ (Appendix D-6)
Notes:
1. Totals may not sum due to rounding

END OF ERRATA

3.2.28 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-42

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to note that Mitigation Measure 3.5-1d has been partially implemented by the project applicant. Draft SEIR page 4.2-42, third paragraph, was revised as follows.

ERRATA

Impacts to Wildlife Species
The 2008 EIR/EIS found that Quarry expansion and well/pipeline development could impact multiple special-status wildlife species including migratory birds, peninsular bighorn sheep, and the barefoot banded gecko. The 2008 EIR/EIS includes the following mitigation measures to reduce potential impacts from Quarry expansion to the special-status wildlife species~~:~~. Note that since publication of the 2008 EIR/EIS, consultation with the USFWS under Section 7 of the federal Endangered Species Act has been completed resulting in issuance of a Biological Opinion (see Draft SEIR Appendix D-3) from the USFWS. This measure is shown here for reference only. Section 7 consultation with the USFWS need not be reinitiated as part of the proposed project.

END OF ERRATA

3.2.29 Errata to Draft SEIR Section 4.2, “Biological Resources,” p. 4.2-42 and -4.2-43

Explanation

Revisions have been made to Draft SEIR Section 4.2, “Biological Resources,” to delete unrelated text erroneously included and update references to the California Department of Fish and Wildlife (formerly the California Department of Fish and Game) in Mitigation Measure 3.5-1e. Draft SEIR page 4.2-42, last paragraph, and page 4.2-43, first paragraph, were revised as follows. Mitigation Measure 3.5-2 is included under DSEIR Impact 4.2-5.

ERRATA

> ***Mitigation Measure 3.5-1e:*** *Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the ~~CDFG~~CDFW and field biologists would be required to hold Memoranda of Understanding with the ~~CDFG~~CDFW to search for this species. If the species is present, then consultation with ~~CDFG~~CDFW under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.*
>
> *~~Regarding the development of Well No. 3 and the association pipeline, the 2008 EIR/EIS found that, with the exception of the flat-tailed horned lizard, impacts to all other special-status wildlife species were found to be less than significant; the flat-tailed horned lizard was observed basking on the rails of the narrow-gauge line. The BLM and other cooperating agencies have implemented a Flat-tailed Horned Lizard Rangewide Management Strategy (2003 Revision) that would minimize adverse impacts and mitigate for residual impacts throughout the flat-tailed horned lizard's geographic range. The 2008 EIR/EIS includes the following mitigation measure to address potential impacts to the Flat-tailed Horned Lizard:~~*
>
> ***Mitigation Measure 3.5-2:*** *USG will comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.*

END OF ERRATA

3.2.30 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-44

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to clarify how to implement Mitigation Measure 3.5-1f. Draft SEIR page 4.2-44, first paragraph, was revised as follows.

ERRATA

> ***Mitigation Measure 3.5-1f:*** *Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the ~~CDFG and the US Army Corps of Engineers~~ California Department of Fish and Wildlife (CDFW) to determine whether CDFW holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code ~~or Section 404 of the Federal Clean Water Act, respectively~~.*

END OF ERRATA

3.2.31 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-45

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to define "WEAP" as "Worker Education Awareness Program" in Mitigation Measure 3.4-7. Draft SEIR page 4.2-45, second paragraph, was revised as follows.

ERRATA

> ***Mitigation Measure 3.4-7:*** <u>*Worker Education Awareness Program (*</u>*WEAP*<u>*)*</u>*. Prior to project approval, USG will develop a WEAP, to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction, operations, and maintenance personnel. The WEAP will be approved by the BLM, USFWS, and CDFW, and will include the following: (1) Descriptions of special-status wildlife of the region, including PBS, and including photos and how to identify adult and sub-adult male and female PBS; (2) The biology and status of special-status species of the area, including PBS; (3) A summary of the avoidance and minimization measures and other conservation measures; (4) An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data; (5) An explanation of the flagging or other marking that designates authorized work areas; and (6) Actions and reporting procedures to be used if any wildlife, including PBS is encountered.*

END OF ERRATA

3.2.32 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-47

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to add further PBS avoidance and minimization measures to Mitigation Measure 3.4-12, consistent with Conservation Measure 11 of the Biological Opinion issued by the USFWS for the project (see Draft SEIR Appendix D-3). See Response 4b-4. Draft SEIR page 4.2-47, fourth paragraph, was revised as follows.

ERRATA

> ***Mitigation Measure 3.4-12:*** *PBS Avoidance and Minimization. USG will implement the following measures throughout the life of the project.*
>
> - *New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.*
> - <u>*Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.*</u>

- *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities and will walk the perimeter of the Quarry expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.*
- *If a PBS enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.*
- *Fencing installed anywhere within the Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to PBS.*
- *When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).*
- *Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).*
- *In consultation with BLM, CDFW, and USFWS, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought.*

END OF ERRATA

3.2.33 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-49

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to add reference to the Approved Jurisdictional Determination for the Quarry issued by the USACE on February 8, 2021. The Approved Jurisdictional Determination has been added to the Draft SEIR as Appendix D-5 and is provided in this FEIR as Appendix C, "Draft SEIR Appendices Errata." Draft SEIR page 4.2-49, first paragraph, was revised as follows.

ERRATA

The Jurisdictional Delineation identified a total 325.79 acres of unnamed streambeds within the Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The Jurisdictional Delineation noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The Jurisdictional Delineation recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction. An Approved Jurisdictional Determination was issued for the project by the US Army Corps of Engineers (USACE) on February 8, 2021 (see Draft SEIR Appendix D-5). According to the approved jurisdictional determination, the USACE determined that waters of the United States do not occur on the project site (USACE 2021). An Update on Groundwater Conditions memorandum conducted an analysis that indicates that current Quarry operations are not the cause of the recent decline in flows at San Felipe Creek. The memorandum notes that no changes have occurred in the local groundwater basin that alter the findings in the 2008 EIR/EIS.

END OF ERRATA

3.2.34 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-52

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to revise Mitigation Measure 3.4-8. Specifically, revisions related to nesting birds were made, as recommended by the CDFW (see Comment 4a-10) with some modifications proposed by the Applicant (see Comment 5b-3). These modifications were reviewed and approved by CDFW staff (see Comment 4d-1) and Imperial County and have been incorporated into this measure, as shown below.

Further revisions related to roosting bats were made to Mitigation Measure 3.4-8, as recommended by the CDFW (see Comment 4a-11) with some modifications proposed by the Applicant (see Comments 5b-4 and 5b-5). These modifications were reviewed by CDFW and Imperial County staff and were largely approved. However, the modification eliminating the compensatory mitigation for permanent impacts to roosting habitat was rejected by the CDFW (see Comment 4d-3). The County determined that CDFW's rejection of the proposed modification was not substantiated (see Responses 5b-5 and 4d-3) and the modification as proposed by the Applicant has been incorporated into this measure, as shown below. The measure was also revised to acknowledge that while compensatory mitigation is not required under CEQA, such mitigation may be required as part of the regulatory permit process.

Finally, additional revisions related to lighting were also made to Mitigation Measure 3.4-8, as recommended by the CDFW (see Comment 4a-12) with some modifications proposed by the Applicant (see Comment 5b-6). These modifications were reviewed and approved by CDFW staff (see Comment 4d-1) and Imperial County and have been incorporated into this measure, as shown below.

Draft SEIR page 4.2-52, first paragraph, and Mitigation Measure 3.4-8 were revised as follows.

ERRATA

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - ~~*MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*~~

Implement existing Mitigation Measure 3.4-8, as revised below:

Mitigation Measure 3.4-8*: Wildlife Impact Avoidance and Minimization Measures: USG will implement the following measures throughout the life of the project (e.g., Plant and Quarry operations).*

- *To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with the expansion of quarrying activities into previously undisturbed areas, the construction of Well No. 3 and associated pipeline, and restoration of Viking Ranch and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys for any of the activities specified above, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on the nature of the planned project activities, species-specific disturbance tolerance, location of the nest, and nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines if the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. A qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.*
- *The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven days prior to initial site clearing for Quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist in consultation with CDFW will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active.*
- *For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the workday. The Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85º F) for the presence of flat-tailed horned lizard or Colorado Desert fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of any wildlife, particularly including the flat-tailed horned lizard or Colorado Desert fringe-toed lizard, prior to backfilling.*

- *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.*
- *Speed limits along all access roads will not exceed 15 miles per hour.*
- *Throughout the lifetime of the project, the project proponent shall avoid or limit the use of artificial light to the extent practicable during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all new lighting for the project is fully shielded, cast downward, reduced in intensity to the greatest extent practicable, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). To the extent practicable, the project proponent shall use LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.* ~~*Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.*~~
- *The boundaries of all areas to be newly disturbed (including Quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground-disturbing activities occur outside the staked area during initial Quarry expansion or ground disturbance.*
- *Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the PoO).*
- *No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.*
- *To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, Quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.*
- *No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the project site, on off-site project facilities and activities, or in support of any other project activities.*
- *Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.*

- *Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.*
- *Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats: Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply:*
  - *For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.*
  - *For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques.*

  - *Implementation of this measure, combined with the other measures provided in this SEIR, will reduce impacts to special status bats to a less than significant level; however, additional mitigation measures may be required through the regulatory permit process.*

END OF ERRATA

3.2.35 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-52

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to clarify that the project does not propose nor require the "take" of any species. Draft SEIR page 4.2-52, fifth paragraph, was revised as follows.

ERRATA

Peninsular Bighorn Sheep
PBS is federally listed as endangered, state listed as threatened, and designated as a "fully protected animal" by the California Fish and Game Code. PBS is recognized as genetically isolated from other populations located farther to the north and east. No "take" of this species is required or included as part of the proposed project.

END OF ERRATA

3.2.36 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-57

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to add a newly proposed mitigation measure, Mitigation Measure 4.2-2c, as recommended by the CDFW (see Comment 4a-8), with some modifications proposed by the Applicant (see Comment 5b-1). These modifications were approved by CDFW (see Response 4d-1) and Imperial County and have been incorporated into the measure, as shown below.

Revisions have also been made to this page of the Draft SEIR to revise Mitigation Measure 3.4-11 (see Response 4b-5).

Draft SEIR page 4.2-57, first paragraph, was revised as follows.

ERRATA

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-5 (Interim Weed Management Plan)*

- *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
- *MM 3.4-7 (Worker Education Awareness Program)*
- *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*
- *MM 3.4-10 (Peninsular Bighorn Sheep Habitat Mitigation)*
- ~~*MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting*~~
- *MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures*

Implement the following revised mitigation measure:

Mitigation Measure 3.4-11: *PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by funding the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW.*

Implementation of this measure, combined with the other measures provided in this SEIR, will reduce impacts to PBS to a less than significant level; however, additional mitigation measures may be required through the regulatory permit process.

Implement the following newly proposed mitigation measures:

Mitigation Measure 4.2-2a: *Minimize Temporary Use Areas: During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed for immediate use.*

Mitigation Measure 4.2-2c: *Assessment of Biological Resources: Prior to construction activities for Quarry Well No. 3, the associated pipeline, and Viking Ranch, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the construction footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code Section 3511), will be completed. Species to be addressed should include all "endangered, rare or threatened species" as defined in CEQA Guidelines Section 15380. The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.*

END OF ERRATA

3.2.37 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-61

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to revise Mitigation Measure 3.4-9 as recommended by the CDFW (see Comment 4a-9) with some modifications proposed by the Applicant (see Comment 5b-2). These modifications were reviewed and approved by CDFW staff (see Comment 4d-1) and Imperial County and have been incorporated into the measure, as shown below.

Draft SEIR page 4.2-61, fifth paragraph, was revised as follows.

ERRATA

Mitigation Measures: *Implement the following existing mitigation measure (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1c (Migratory Birds)*
  - *MM 3.5-1d (Peninsular Bighorn Sheep)*
- *2019 SEIS:*
  - *MM 3.4-6 (Mining Activity Monitoring and Reporting)*
  - *MM 3.4-7 (Worker Education Awareness Program)*
  - *MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)*
  - ~~*MM 3.4-9 (Burrowing Owl)*~~

Implement new Mitigation Measure 4.2-2a, see above.

Implement existing Mitigation Measure 3.4-9, as revised below:

Mitigation Measure 3.4-9: *Burrowing Owl Avoidance:* ~~*If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation (March 2012), including provision of replacement burrows prior to the exclusion.*~~ *Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with expansion of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of Viking Ranch over the lifetime of the project. The qualified biologist and* *project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing the activities specified above. The plan shall serve as a protocol of actions to address occupied habitat within future phases of quarry expansion, the proposed site for Well No. 3 and associated pipeline, and Viking Ranch. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the acres of burrowing owl habitat that will be impacted, details of site monitoring and reporting requirements, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been revaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. The Burrowing Owl Plan shall identify adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The project proponent shall implement the Burrowing Owl Plan following CDFW review and approval.*

Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys shall be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, the project activities specified above shall be immediately halted until pre-defined avoidance and minimization measures contained in the Burrowing Owl Plan have been implemented.

Level of Significance After Mitigation: Less than significant.

END OF ERRATA

3.2.38 Errata to Draft SEIR Section 4.2, "Biological Resources," p. 4.2-63

Explanation

Revisions have been made to Draft SEIR Section 4.2, "Biological Resources," to add reference to the Approved Jurisdictional Determination for the Quarry issued by the USACE. This section was also revised to add a new mitigation measure, Mitigation Measure 4.2-3, as recommended by the CDFW (see Comment 4a-13). No modifications to this measure were proposed by the Applicant (see Comment 5b-7). Draft SEIR page 4.2-63, discussion of Impact 4.2-3, was revised as follows.

ERRATA

Quarry, Well No. 3 Site and Pipeline Alignment

The 2008 EIR/EIS determined that Quarry expansion activities would impact existing streambeds which could be under the jurisdiction of CDFW~~G~~ through Sections 1601-3 of the California Fish and Game Code or the US Army Corps of Engineers through Section 404 of the Federal Clean Water Act. Mitigation Measure 3.4-13 was provided requiring USG to contact and consult with these agencies prior to disturbing streambeds within the Quarry expansion areas to determine jurisdiction and regulatory requirements.

However, since that time, the USACE issued an Approved Jurisdictional Determination on February 8, 2021 (see Draft SEIR Appendix D-5) confirming there are no waters of the United States subject to regulation under Section 404 of the federal Clean Water Act in the project area. However, the RWQCB maintains jurisdiction over the aquatic resources in the project area under the Porter-Cologne Act."

The 2019 SEIS included an updated jurisdictional delineation for the project site which identified 139 acres of waters of the US within the expected disturbance area of the proposed Quarry expansion and well/pipeline development. The SEIS included mitigation to offset impacts by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacts functions. In response, USG proposes to mitigate impacts at a 1.92:1 mitigation-to-impact ratio, for a total of 267.3 acres of rehabilitation, enhancement, and preservation of aquatic resources. The proposed compensatory mitigation consists of the restoration and enhancement of the Viking Ranch site and the preservation of the Old Kane Springs site, as described and analyzed herein.

Implementation of this mitigation would fully mitigate the project's impacts to protected wetlands within the project site and no further mitigation is required. The potential environmental effects of implementing this mitigation are addressed throughout this SEIR.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*

- *2008 EIR/EIS:*
  - *MM 3.5-1f (Agency Contacts for Impacts to Streambeds)*
- *2019 SEIS:*
  - *MM 3.4-13 (Future Quarry Phasing Notification and Review)*

Implement the following new mitigation measure:

Mitigation Measure 4.2-3: *Lake and Streambed Alteration Program: Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under Section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code Section 1602 resources associated with the Project.*

Level of Significance After Mitigation: Less than significant.

END OF ERRATA

3.2.39 Errata to Draft SEIR Section 4.3, "Cultural Resources," p. 4.3-17

Explanation

Revisions have been made to Draft SEIR Section 4.3, "Cultural Resources," to correct an incorrect reference. Draft SEIR page 4.3-17, Mitigation Measure 4.3-2, was revised as follows.

ERRATA

> ***Mitigation Measure 4.3-2:*** *Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project activities, the project operator shall immediately halt work within 50 feet of the find, contact the Imperial County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e)~~4(e)(1)~~. If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, with the MDL regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*

END OF ERRATA

3.2.40 Errata to Draft SEIR Section 4.4, "Geology, Soils, and Paleontological Resources," p. 4.4-13

Explanation

Revisions have been made to Draft SEIR Section 4.4, "Geology, Soils, and Paleontological Resources," to clarify implementation of Mitigation Measure 4.4-1. Draft SEIR page 4.4-13, Mitigation Measure 4.4-1, was revised as follows.

ERRATA

> ***Mitigation Measure 4.4-1:*** *Pre-construction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources are identified in a preconstruction field survey and cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a ~~BLM-permitted~~ qualified paleontologist and approved by ~~the BLM and~~ Imperial County.*

END OF ERRATA

3.2.41 Errata to Draft SEIR Section 4.6, "Hydrology and Water Quality," p. 4.6-9

Explanation

Revisions have been made to Draft SEIR Section 4.6, "Hydrology and Water Quality," to correct a figure reference. Draft SEIR page 4.6-9, sixth paragraph, was revised as follows.

ERRATA

Floodplain

The floodplain on the Viking Ranch site is shown on Figure 2-3, “Viking Ranch Restoration Site.” ~~Figure 2-4, “Old Kane Springs Road Preservation Site.”~~ As a result of it’s ~~it is~~ former use as an orchard, the Viking Ranch site is hydrologically disconnected from the Coyote Creek floodplain. The flow characteristics of the site have been substantially altered from natural conditions and windrows of coarse organic materials (from ground up orchard trees) and onsite topographic modifications impede water flows (Dudek 2022~~1~~).

END OF ERRATA

3.2.42 Errata to Draft SEIR Section 4.6, “Hydrology and Water Quality,” p. 4.6-22

Explanation

Revisions have been made to Draft SEIR Section 4.6, “Hydrology and Water Quality,” to add reference to the Approved Jurisdictional Determination for the Quarry issued by the USACE. The Approved Jurisdictional Determination is provided as Appendix D-5 of the Draft SEIR which is included in Appendix C, “Draft SEIR Appendices Errata,” of this Final SEIR. Draft SEIR page 4.6-22, second paragraph, was revised as follows.

ERRATA

The Jurisdictional Delineation identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages. The Jurisdictional Delineation noted that Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages. No wetland habitat was identified to occur at the Quarry, Well No. 3, or pipeline alignment. Little to no vegetation was observed to occur within any of the drainages evaluated. The Jurisdictional Delineation recommended avoidance and minimization measures to address potential impacts to wildlife, vegetation, and habitat that could occur during the disturbance of drainages during project construction. An Approved Jurisdictional Determination was issued for the project by the US Army Corps of Engineers (USACE) on February 8, 2021 (see Appendix D-5). According to the Approved Jurisdictional Determination, the USACE determined that waters of the United States do not occur on the project site (USACE 2021).

END OF ERRATA

3.2.43 Errata to Draft SEIR Section 4.6, “Hydrology and Water Quality,” p. 4.6-24

Explanation

Revisions have been made to Draft SEIR Section 4.6, “Hydrology and Water Quality,” to replace incorrect text. Draft SEIR page 4.6-24, second and third paragraphs, was revised as follows.

ERRATA

Viking Ranch Restoration Site

~~The Hydrology Study (Dudek 2018) did not evaluate the impacts of the development of proposed Well No. 3 and associated pipeline, but noted that the 2008 EIR/EIS covered the potential impacts of these project components in detail, and further noted that the installation of the proposed water supply line to the Quarry would result in temporary construction related impacts to a number of ephemeral drainages, but these impacts would be less than significant as the anticipated impacts would not permanently modify the existing drainages.~~

During restoration activities on the site, erosion control and pollution prevention BMPs would be required as part of the SWPPP prepared for the site. These BMPs would likely include scheduling ground disturbing activities outside of the rainy season and stabilizing soils by seeding exposed soils and using straw mulch or mats. Additional BMPs are provided in the HMMP (Dudek 2021) prepared for the site including inspecting and repairing onsite equipment regularly to prevent leaks of hazardous substances. Implementation of BMPs would be overseen by the project biologist or a qualified SWPPP practitioner.

END OF ERRATA

3.2.44 Errata to Draft SEIR Section 4.6, "Hydrology and Water Quality," p. 4.6-27 and 4.6-28

Explanation

Revisions have been made to Draft SEIR Section 4.6, "Hydrology and Water Quality," to remove Mitigation Measure 4.6-1 which has already been implemented by the Applicant. See Response 5a-14. Draft SEIR page 4.6-27 was revised as follows.

ERRATA

To address the identified deficiencies in the existing berm design, Dudek (2018) recommended modifications including, at a minimum, a 50-foot-wide conveyance channel on the western side of the berm. To assist with the conveyance of surface flows around the berm, Dudek further recommended that the berm design include armoring of the westerly bank of the berm with rock riprap to decrease the likelihood and severity of erosion damage to the berm for flows generated by a 25-year design storm. The 25-year storm was selected because the berm is not intended to protect life, property, or civil improvements. In a larger storm event, it would be expected that the riprap armoring would fail, and the berm would suffer significant damage or failure. These recommendations ~~would be~~have been incorporated into the final berm design ~~by a qualified Civil Engineer~~ and the berm has since been constructed as required by the 2019 EIS ~~Mitigation Measure 4.6-1 below~~.

Downstream Waterways

As demonstrated above, the project is expected to result in the downstream reduction of surface flow and sediment loading to the Fish Creek Alluvial Fan. The potential reduction in accompanying groundwater recharge at the apex of the Fish Creek Alluvial Fan would likely be offset by increased recharge within the coarse alluvium of the Quarry watershed and is overall considered minimal with the project site contributing less than 1 percent of the total Ocotillo Lower Felipe HA land cover. As the perennial surface waters in the lower San Felipe River are not dependent on surface flows from Fish

Creek Wash, the project would have no impact on creek flows or the associated habitat for desert pupfish (see Section 4.2, "Biological Resources").

In conclusion, the overall drainage patterns of the project site would remain unchanged with any runoff that does not evaporate or percolate into the coarse alluvium ultimately draining to the Fish Creek Alluvial Fan. Because drainage within the Easterly Drainage Area would be impounded, total volumes and peak flow rate would decrease thus no flooding or other adverse impacts would occur. With implementation of Mitigation Measure 3.3-7 as provided in the 2008 EIR/EIS~~ and Mitigation Measure 4.6-1 as provided below~~, drainage within the Westerly Drainage Area would be directed northward to the Fish Creek Alluvial Fan consistent with existing conditions and no flooding or other adverse impacts would occur.

Level of Significance Before Mitigation: Potentially significant.

Mitigation Measures: *Implement the following existing mitigation measure~~s~~ (see Section 4.6.4 for the full text of each measure):*

- *2008 EIR/EIS*
  - *Mitigation Measure 3.3-7*

~~***Mitigation Measure:*** *Implement the following new mitigation measure:*~~

~~***Mitigation Measure 4.6-1:*** *The final design for the proposed berm along the westerly edge of the Quarry shall incorporate the recommendations provided in the Hydrologic and Water Quality Study prepared by Dudek dated April 2018 and appended to this SEIR. These recommendations include a 50-foot-wide conveyance channel on the western side of the berm and armoring of the westerly bank of the berm with rock riprap.*~~

Level of Significance After Mitigation: Less than significant.

END OF ERRATA

3.2.45 Errata to Draft SEIR Section 4.7, "Land Use and Planning," p. 4.7-1

Explanation

Revisions have been made to Draft SEIR Section 4.7, "Land Use and Planning," to clarify that some development does occur within the well site and associated pipeline alignment. Draft SEIR page 4.7-1, fifth paragraph, was revised as follows.

ERRATA

Well No. 3 and Associated Pipeline

The site of proposed Well No. 3 and associated pipeline alignment are located north and northeast of the Quarry and about six miles south of State Highway 78 in an area characterized by the 2008 EIR/EIS as flat desert open space. The well site and western segment of the pipeline alignment are located on private land owned by USG Corporation while the central and eastern segments of the pipeline alignment are on federal land managed by the BLM. A portion of the northwest segment of the proposed pipeline alignment crosses the Anza Borrego Desert State Park. No development was present in 2008 with the exceptions of existing wells on the well site and an active railroad line and associated dirt access road within the pipeline alignment.

END OF ERRATA

3.2.46 Errata to Draft SEIR Section 4.7, "Land Use and Planning," p. 4.7-2

Explanation

Revisions have been made to Draft SEIR Section 4.7, "Land Use and Planning," to clarify that the well site and pipeline alignment have been previously disturbed through development of multiple wells and a railroad line and associated dirt access road. Draft SEIR page 4.7-2, second paragraph, was revised as follows.

ERRATA

Well No. 3 Site and Pipeline Alignment

The land use conditions on and surrounding the site of Well No. 3 and associated pipeline alignment remain essentially unchanged from those described in the 2008 EIR/EIS. Both the well site and pipeline alignment have been previously disturbed with wells present on the well site and a railroad line and dirt access road present within the pipeline alignment. ~~remain undeveloped with no structures or other improvements.~~ The nearest sensitive receptors are rural residences north and northwest of the well site and pipeline alignment.

END OF ERRATA

3.2.47 Errata to Draft SEIR Section 4.7, "Land Use and Planning," p. 4.7-13

Explanation

Revisions have been made to Draft SEIR Section 4.7, "Land Use and Planning," to correct a minor typographical error. Draft SEIR page 4.7-13, discussion of Impact 4.7-1, was revised as follows.

ERRATA

Impact 4.7-1: Physically Divide an Established Community

Overall land use patterns in the project area have not changed since completion of the 2008 EIR/EIS. There are no established communities adjacent to the Quarry or the proposed locations of Well No. 3 and the associated pipeline. Continuation of Quarry operations and construction of Well No. 3 and an underground pipeline would not create a physical barrier to movement or growth. Similarly, the proposed off-site mitigation sites are not within or near an established community. No development is proposed on either site. Therefore, the proposed project would have no potential to physically divide an established community.

END OF ERRATA

3.2.48 Errata to Draft SEIR Section 4.8, “Tribal Cultural Resources,” p. 4.8-5

Explanation

Revisions have been made to Draft SEIR Section 4.8, “Tribal Cultural Resources,” to add the correct CEQA Guidelines Appendix G thresholds. Draft SEIR page 4.8-5, Section 4.8.3.1, was revised as follows.

ERRATA

CEQA Appendix G Significance Criteria

~~Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to cultural resources if it would:~~

~~a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5;~~

~~b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5;~~

~~c) Disturb any human remains, including those interred outside of dedicated cemeteries.~~

Based on Appendix G of the CEQA Guidelines, the proposed project would have a significant impact to tribal cultural resources if it would:

a) Cause a substantial adverse change in the significant of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

  i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or

  ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

END OF ERRATA

3.2.49 Errata to Draft SEIR Chapter 5, “Cumulative Impacts,” p. 5-16

Explanation

Revisions have been made to Draft SEIR Chapter 5, “Cumulative Impacts,” to correct a typographical error. Draft SEIR page 5-16, fourth paragraph, was revised as follows.

ERRATA

5.3.5 Greenhouse Gas Emissions

Project Impacts

Project impacts pertaining to greenhouse gas emissions ~~geology, soils, and paleontological resources~~, as described in Section 4.5~~4.4~~, are as follows:

END OF ERRATA

3.2.50 Errata to Draft SEIR Chapter 5, "Cumulative Impacts," p. 5-17

Explanation

Revisions have been made to Draft SEIR Chapter 5, "Cumulative Impacts," to correct a typographical error. Draft SEIR page 5-17, first paragraph, was revised as follows.

ERRATA

5.3.6 Hydrology and Water Quality

Project Impacts

Project impacts pertaining to hydrology and water quality ~~geology, soils, and paleontological resources~~, as described in Section 4.6~~4.4~~, are as follows:

END OF ERRATA

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CHAPTER 4:
RESPONSE TO COMMENTS

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CHAPTER 4:
RESPONSE TO COMMENTS

4.1 INTRODUCTION

This chapter of the Final Subsequent Environmental Impact Report (Final SEIR) for the USG Plaster City Quarry Expansion and Well No. 3 Project (proposed project) provides specific responses to each issue raised in comments on the Draft SEIR. Comment letters are ordered as received from agencies, organizations, and individuals. Each comment letter has been assigned a number and the individual comments/issues within each letter are assigned sequential subnumbers (e.g., 1-1, 1-2). An index that lists each commenter and the number assigned to the comment letter is provided on the following pages.

The text of each comment/issue is reproduced using `courier new font` and is followed by the County's response numbered to correspond with each respective comment. All comment letters are also provided in the EIR original form in Appendix A, "Comments on the Draft SEIR," where the comment letters are numbered in the upper right corner of the first page to correspond to the numbering used in this chapter. Note that the reproduction of comments in this chapter is intended to reflect the text of the comment letters. Formatting; font emphases (e.g., underline, bold, all capital); and graphics, tables, and other attachments are not necessarily reflected in the reproduced text here and are noted in brackets in certain instances in this chapter. The County has reviewed all original comment letters on the SEIR with original formatting, font emphasis, graphics, tables, and other attachments. Reviewers interested in the content of a specific comment letter should see Appendix A for a reproduction of the original letter.

The County has provided a response to all comments received during public circulation of the Draft SEIR. In every instance, each comment was carefully considered for its contribution of information regarding environmental impacts and other issues relevant to the County's CEQA review of the project. In general, all comments concerning an environmental issue pertaining to analysis in the Draft SEIR receive a response that either (1) summarizes the information provided in the SEIR and directs the commenter to the chapter/section(s) of the SEIR providing that information or (2) provides additional clarifying information concerning the environmental issue raised by the commenter.

In some instances, information in comments was incorporated into the Final SEIR to amplify the impact analysis or mitigation measures, or to otherwise clarify the information presented. In none of these instances did the additional information incorporated into this Final SEIR result in identifying a new significant impact or an increase in the severity of a significant impact identified in the Draft SEIR. Thus, while these revisions amplify and clarify information based on certain comments, these revisions do not result in requiring the County to recirculate the SEIR for public review and comment before certification.

If the comment did not address an environmental issue (e.g., opposition or support of the project), a response is provided noting that this comment does not pertain to an environmental issue. All comments will be considered by County decision makers for the SEIR deliberations in approval or denial of the entitlements requested for the project.

4.2 COMMENT LETTERS

Table 4-1, "Comment Letters," lists the comment letters and provides the numbering and order used to organize the comment letters received.

Table 4-1
Comment Letters

Commenter	Date	Comment Letter No.
AGENCIES		
Imperial County Executive Office	April 19, 2023	1
Imperial Irrigation District	May 22, 2023	2
California Department of Transportation	May 25, 2023	3
California Department of Fish and Wildlife	June 2, 2023	4a
California Department of Fish and Wildlife	August 17, 2023	4b
California Department of Fish and Wildlife	August 24, 2023	4c
California Department of Fish and Wildlife	August 31, 2023	4d
California Department of Fish and Wildlife	October 27, 2023	4e
ORGANIZATIONS		
US Gypsum	June 2, 2023	5a
US Gypsum	June 23, 2023	5b
INDIVIDUALS		
Edie Harmon	June 1, 2023	6a
Edie Harmon	June 4, 2023	6b

4.3 AGENCIES

Letter 1: Imperial County Executive Office; April 19, 2023

Comment 1-1

The County of Imperial Executive Office is commenting on USG Plaster City Quarry Expansion and Well No. 3 Project – CUP 20-0016 project. The Executive Office would like to inform the developer and the Imperial County Planning Department of conditions and responsibilities should the applicant seek a Conditional Use Permit (CUP). The conditions shall be placed on CUP 20-0016 and commence prior to the approval of an initial grading permit and subsequently continue throughout the permitting process. This includes, but not limited to:

- Sales Tax Condition. The permittee is required to have a Construction site Permit reflecting the project site address, allowing all eligible sales tax payments are allocated to the **County of Imperial, Jurisdictional Code 13998**. The permittee will provide the County of Imperial a copy of the CDTFA account number and sub-permit for its contractor and subcontractor (if any) related to the jobsite. Permittee shall provide in written verification to the County Executive Office that the necessary sales and use tax permits have been obtained, prior to the issuance of any grading permits.

- Construction/Material Budget: Prior to a grading permit, the permittee will provide the County Executive Office a construction materials budget: an official construction materials budget or detailed budget outlining the construction and materials cost for the processing facility on permittee letterhead.

Response 1-1

The comment is noted. The County will ensure that a condition of approval requires compliance with sales tax and construction/material budget requirements.

Letter 2: Imperial Irrigation District; May 22, 2023

Comment 2-1

On April 11, 2023, the Imperial Irrigation District received from the Imperial County Planning & Development Services Department, the Notice of Availability of Draft Subsequent EIR for the USG Plaster City Quarry Expansion and Well No. 3 project; Conditional Use Permit No. 20-0016. The project consists of approval of a CUP from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. The Draft SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA review for use by responsible agencies. The USG Plaster City Quarry consist of 2,048 acres located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (APN 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30-foot-wide by 3.5 miles long) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road.

Response 2-1

The comment is noted and accurately describes the proposed project.

Comment 2-2

IID has reviewed the Draft SEIR and found that the comments provided in the August 22, 2022 district letter (see attached letter) continue to apply.

Response 2-2

The comment is noted. The reader is referred to Responses 2-3 through 2-6 below.

Comment 2-3

1. To obtain electrical service for the proposed well pump #3, the applicant should be advised to contact Gabriel Ramirez, IID Service Planner, at (760) 339-9257 or e-mail Mr. Ramirez at gramirez@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the applicant will be required to submit pump specifications: horse power, operating voltage, pump starter information; AutoCAD site plan, drawings, proposed power line that will serve the well pump, and the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing new electrical service to the project.

2. Electrical capacity is limited in the project area. A circuit study may be required. Any system improvements or mitigation identified in the circuit study to enable the provision of electrical service to the project shall be the financial responsibility of the applicant.

Response 2-3

The comment is noted. The County will require a condition of approval that requires the Applicant to obtain electrical service for Well Pump No. 3 and obtain applicable permits.

Comment 2-4

3. The proposed project is subject to IID's Interim Water Supply Policy. In order to obtain a water supply from IID for a non-agricultural project, the project proponent will be required to comply with all applicable IID policies and regulations and is required to enter into a water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water

supply impacts of the Project, including potential impacts to the Salton Sea as a result of reduced drainage flow, be adequately assessed, appropriate mitigation developed if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies.

4. IID has implemented a water supply apportionment program pursuant to IID's revised Equitable Distribution Plan, which the Project is subject to including any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the Project's water as an industrial water user. For more information on how to obtain a water supply agreement, please visit IID's website at https://www.iid.com/water/municipal-industrial-and-commercial-customers or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com.

Response 2-4

A new water supply from IID is not required for activities associated with the development of Well No. 3 and pipeline, mining and reclamation activities under the Quarry expansion, Viking Ranch restoration, or Old Kane Springs Road preservation. Quarry operations would be served by proposed Well No. 3 and the associated pipeline. The hydrologic effects of the proposed well, including potential changes to drainage volumes and patterns, are addressed in Draft SEIR Chapter 4.6, "Hydrology and Water Quality."

Comment 2-5

5. Although the proposed well #3 is not an issue because it is outside of the Lower Colorado River Accounting Surface area, nonetheless, the project is subject to an IID Encroachment Permit for a pump the applicant plans to place on the Westside Main Canal.

6. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). kA copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

7. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.

Response 2-5

The comment is noted. Regarding the IID's Encroachment Permit for a pump the applicant plans to place it on the Westside Main Canal, that is a separate project outside the scope of this SEIR. The Applicant will be required to comply with CEQA and obtain applicable permits for the construction and operation of that pump. In addition, the County will require the Applicant to consult with IID before the installation of any facilities adjacent to IID's facilities.

Comment 2-6

8. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent.

Response 2-6

The project includes installation of a power distribution line within the proposed water pipeline corridor to provide electrical service to Well No. 3. Potential impacts associated with installation and operation of this transmission line are evaluated throughout the Draft SEIR. All mitigation measures will be included in the project's Mitigation Monitoring Reporting Program and will be incorporated as conditions of approval. The Applicant will be required to monitor and report on its compliance and comply with each condition of approval.

Letter 3: California Department of Transportation; May 25, 2023

Comment 3-1

Caltrans has discretionary authority with respect to highways under its jurisdiction any may, upon application and if good cause appears, issue a special permit to operate or move a vehicle or combination of vehicles or special mobile equipment of a size or weight of vehicle or load exceeding the maximum limitations specified in the California Vehicle Code. The Caltrans Transportation Permits issuance Branch is responsible for the issuance of these special transportation permits for oversize/overweight vehicles on the State Highway network. Additional information is provided online at: http://www.dot.ca.gov/trafficops/permits/index.html

Response 3-1

The comment is noted. The County will direct the Applicant to the above-referenced website to determine applicability of Caltrans Transportation Permits for the project.

Letter 4a: California Department of Fish and Wildlife; June 2, 2023

Comment 4a-1

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (Id., § 1802.) Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code.

Response 4a-1

The comment is noted. The California Department of Fish and Wildlife (CDFW) is identified as a Responsible Agency and Trustee Agency for the proposed project in Draft SEIR Section 1.5, "Responsible and Trustee Agencies." The project is not expected to result in "take" of any species protected under CESA.

Comment 4a-2

PROJECT DESCRIPTION SUMMARY

Proponent: United States Gypsum (USG)

Objective: The proposed Project consists of approval of a Conditional Use Permit from Imperial County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. A Draft Final Environmental Impact Report/Environmental Impact Study was completed for the project in April 2006. On March 18, 2008, a Final Environmental Impact Report/Environmental Impact Study was certified by the Imperial County Board of Supervisors pursuant to the requirements of CEQA (SCH 2001121133). As such, the potential environmental impacts of the proposed quarry expansion and reclamation and development of Quarry Well No. 3 were previously evaluated in the 2008 Environmental Impact Report/Environmental Impact Study. Additional land use entitlements from Imperial County are not needed for mining and reclamation activities under the quarry expansion. However, because Well No. 3 would provide water to support quarry operations, this DSEIR evaluates potential environmental impacts associated with mining and reclamation activities under the quarry expansion. The DSEIR also evaluates potential environmental impacts associated with the restoration of the Viking Ranch site (207 acres) and preservation of the Old Kane Springs Road site (121 acres). USG identified these sites for preservation to provide compensatory mitigation for impacts to 139 acres of waters of the United States at the quarry.

The Project includes expansion of the quarry areas on a series of mining claims to the south and southeast of the existing quarries. The existing and proposed quarry would be located primarily on private lands, but also would include new disturbance within mining claims on public lands managed by the

Bureau of Land Management (BLM). The total acreage of USG’s claims on public lands is 73.2 acres, and planned disturbance would be limited to 18.1 acres within them. The area proposed for continuing and future quarrying is on middle and lower slopes and a broad alluvial wash.

Well No. 3 would be located east of the existing quarry on a USG-owned parcel (APN 033-020-009) and would provide processing water via a 10-inch-diameter, approximately 3.5-mile-long underground pipeline that would be developed within the existing USG narrow-gauge railroad right-of-way. The pipeline would extend from Well No. 3 to the existing offload facility within the quarry processing area. In conjunction with the development of the pipeline, USG would install an electric supply line to serve the well pump. The power service line would be installed underground from the well head to the quarry gate, and power poles would be installed within the quarry site. The well would be approximately 6 inches in diameter and 565 feet in depth. The water would be used in the quarry for dust suppression on the haul roads and crushing equipment, for the watering of transplanted desert plant species during reclamation, and as a possible supply of potable water for use by employees.

The proposed pipeline would be constructed of high-density polyethylene pipe and would be installed at a depth of about 4 feet below the ground surface. The pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. A trench, approximately five feet wide and seven feet deep would be excavated between the railroad and access road for installation of the pipeline. Excavated soils would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Construction would occur within a 30-foot-wide area along the entire length of the pipeline alignment. Development of the pipeline would disturb approximately 12.7 acres (30 foot wide by 3.5 miles) of land, most of which is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. All waterline/powerline construction areas would be restored to pre-project conditions following the completion of construction activities.

The proposed project also includes restoration and/or preservation of two proposed offsite mitigation sites (Viking Ranch restoration site and Old Kane Springs Road preservation site) in San Diego County for the purpose of mitigating anticipated impacts to jurisdictional waters within the quarry expansion area. These project components were not evaluated in the 2008 Environmental Impact Report/Environmental Impact Study or the 2019 Supplemental Environmental Impact Study but are undergoing environmental review in the DSEIR.

The Viking Ranch parcels were primarily former orchard land located north of Borrego Springs and within the Coyote Creek Wash. However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The proposed mitigation site is located approximately 26 miles from the USG Quarry. Viking Ranch was used for orchard production until the site was purchased by the Borrego Water District in 2017. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The restoration program proposes to remove these diversion features to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain. Proposed restoration activities at the Viking Ranch site would include tree stump removal, grading, excavations, and revegetation of the site. These activities are expected to require the use of backhoes, a trencher, grader, dozer, and dump truck, as well as supply and water trucks. The Old Kane Springs Road Preservation Site would be preserved in its existing conditions. No construction or development is proposed at this site.

Location: The Project’s proposed USG Quarry Well No. 3 is located in Imperial County on USG-owned property APN 033-020-009. It is located within Section 16 of Township 13 South, Range 09 East SBM.

The Project’s proposed pipeline alignment is located in Imperial County within USG owned property (APNs 033-020-009; 033-060-010 and -008); land owned by the U.S. Bureau of Land Management (BLM) (APNs 033-010-025 and -017; and 033-060-012); and Anza-Borrego Desert State Park (APN 033-010-016). The pipeline crosses Sections 16, 17, 18, and 19 of Township 13 South, Range 09 East SBM.

The Project’s associated Viking Ranch restoration site is located in San Diego County and consists of approximately 150 acres of property owned by Borrego Water District (APNs 140-030-09-00 and -11-00); approximately 10 acres of privately owned property (APN 140-030-10-00); and approximately 47 acres of lands adjacent to these parcels that would be restored or enhanced. The adjacent lands consist of approximately 13 acres of land owned by the Anza-Borrego Foundation (APN 140-030-05-00), approximately 3 acres of State Park-owned land to the north of the restoration site, and approximately 31 acres of State Park-owned lands to the east of the restoration site (APN 140-030-07-00). The restoration site is located in the southeast corner of Section 4 of Township 10 South, Range 06 East SBM.

The Project's associated 121-acre Old Kane Springs Road preservation site is located in San Diego County on privately owned property (APN 253-150-34-00). The mitigation site is located in Section 18 of Township 12 South, Range 08 East SBM.

Timeframe: The proposed project and its associated mining and reclamation activities are anticipated to disrupt portions of the Project site for at least 80 years.

Response 4a-2

The County approved a conditional use permit (CUP) for Well No. 3 and associated pipeline in 2008. However, the CUP expired because none of the activities authorized under the CUP commenced within the specified time period following approval. Therefore, USG has applied for a new CUP for Well No. 3 and the associated pipeline. No changes have been proposed to the description of Well No. 3 and associated pipeline as previously approved by the County and evaluated in the Final Environmental Impact Report certified by the County in 2008 (the 2008 FEIR).

The County approved the quarry expansion in 2008, and no further discretionary approvals are required from the County for the proposed mining and reclamation activities under the Quarry expansion. However, as noted in the Draft SEIR, approvals will be required from CDFW under the Fish and Game Code for certain aspects of the Quarry expansion. As such, CDFW was identified in the Draft SEIR as a responsible agency under CEQA.

The potential environmental impacts associated with mining and reclamation activities associated with the Quarry expansion were previously evaluated in the 2008 FEIR and in the Final Supplemental Environmental Impact Statement prepared for the project by BLM (the 2019 SEIS). No significant changes have been proposed relative to the mining and reclamation activities as described in those environmental documents. Consequently, with respect to the activities associated with Quarry expansion, the primary focus and intent of this SEIR is to (1) update the 2008 EIR by incorporating the information and mitigation measures that were developed as part of the 2019 SEIS, and (2) to evaluate whether there have been any changes in the circumstances surrounding the proposed Quarry activities, or any new information concerning these activities, that raise any new or substantially more severe impacts on the environment as compared to the analysis contained in the 2008 FEIR. (See CEQA Guidelines, Section 15162.) No such changes in circumstances or new information have been identified.

Comment 4a-3

COMMENTS AND RECOMMENDATIONS

CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (i.e., biological resources). CDFW offers the comments and recommendations below to assist Imperial County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. The DSEIR has not adequately identified and disclosed the Project's impacts (i.e., direct, indirect, and cumulative) on biological resources and whether those impacts are reduced to less than significant.

CDFW's comments and recommendations on the DSEIR are explained in greater detail below and summarized here. CDFW is concerned that the DSEIR does not adequately identify or mitigate the Project's significant, or potentially significant, impacts to biological resources. CDFW also concludes that the DSEIR lacks sufficient information to facilitate a meaningful review by CDFW, including both a complete and accurate assessment of biological resources on the Project site. CDFW recommends that additional information and analyses be added to a revised DSEIR, along with avoidance, minimization, and mitigation measures that avoid or reduce impacts to less than significant.

Response 4a-3

As explained below in Responses 4a-4 through 4a-13, the County believes that this SEIR adequately identifies and mitigates the project's potentially significant impacts. In addition, as explained by Responses 4a-4 through 4a-13, together with the errata section (Chapter 3, "Draft SEIR Errata"), this SEIR contains adequate information to facilitate a meaningful review by CDFW.

Comment 4a-4

Existing Environmental Setting

Compliance with CEQA is predicated on a complete and accurate description of the environmental setting that may be affected by the proposed Project. CDFW is concerned that the assessment of the existing environmental setting has not been adequately analyzed in the DSEIR. CDFW is concerned that without a complete and accurate description of the existing environmental setting, the DSEIR may provide an incomplete analysis of Project-related environmental impacts.

The DSEIR lacks a recent and complete assessment of biological resources within the Project site and surrounding area. A complete and accurate assessment of the environmental setting and Project-related impacts to biological resources is needed to both identify appropriate avoidance, minimization, and mitigation measures and demonstrate that these measures reduce Project impacts to less than significant.

Response 4a-4

The description of the environmental setting "shall be no longer than is necessary to provide an understanding of the significant effects of the proposed project and its alternatives." [CEQA Guidelines Section 15125(a).] In this case, the environmental setting for the project relative to biological resources was adequately described in Sections 2.5, "Environmental Setting," and 4.2.1, "Regulatory Setting," of the Draft SEIR. As discussed in Section 4.2.1.2, "Biological Resource Conditions at the Time of the 2008 EIR/EIS," of the Draft SEIR, the environmental setting for the project was also described in the 2008 FEIR. [See Public Resources Code Section 21003(d) (Information developed in individual environmental impact reports are to be "incorporated into a data base which can be used to reduce delay and duplication in preparation of subsequent environmental impact reports").]

The description of the environmental setting for the project contained in the Draft SEIR and the 2008 FEIR is sufficient to give the "public and decision makers the most accurate and understandable picture practically possible of the project's likely near-term and long-term impacts," and allows those potential impacts "to be considered in the full environmental context" as required by CEQA. [CEQA Guidelines Section 15125(a) and (c).]. Furthermore, on June 15, 2023, a senior biologist from Aspen Environmental Group visited the project site and determined that the site conditions remain consistent with those described in the Biological Resources Technical Report BRTR) provided as Appendix D-1 to the Draft SEIR. A copy of the memorandum dated August 7, 2023, from Aspen Environmental Group, summarizing the findings of the June 15, 2023, biologist site visit is provided as Appendix D, "Aspen Memorandum: Updated Site Conditions," to the Final SEIR.

Additional information concerning the occurrence of Peninsular bighorn sheep (PBS) in the project area has also been provided by CDFW. This additional data was provided via email on August 17, 2023, and August 24, 2023, and are included in this Final SEIR as Letter 4b and Letter 4c, respectively. The data generally consists of GPS radio collar data collected in the project area between 2015 and 2022 showing the range and seasonal movement patterns of the local PBS population. This data is substantially the same as that provided previously by CDFW and used to support preparation of both the 2019 SEIS and this SEIR. The data and associated analysis are accepted and incorporated into the SEIR's description of the environmental setting. The reader is also referred to Response 4a-7, Responses 4b-1 through 4b-6, and Responses 4c-1 through 4c-3 for further discussion of the data and analysis provided by CDFW.

The Draft SEIR generally describes the physical environmental conditions as they existed at the time the notice of preparation was published. [See CEQA Guidelines Section 15125(a)(1) and Response 4a-6.] However, these conditions may change over time. Therefore, in light of the long-range timeframe for implementation of the project in this case, mitigation measures have been added and/or revised to require preparation of focused biological surveys prior to vegetation removal or ground-disturbing activities associated with specific components of the project. See Responses 4a-6 through 4a-11.

Comment 4a-5

Mitigation Measures

CEQA requires that a DSEIR include mitigation measures to avoid or reduce significant impacts. CDFW is concerned that the mitigation measures proposed in the DSEIR are not adequate to avoid or reduce impacts to biological resources to below a level of significance. To support Imperial County in ensuring that Project impacts to biological resources are reduced to less than significant, CDFW recommends adding mitigation measures for an assessment of biological resources, bats, and the CDFW Lake and Streambed Alteration Program, as well as revising the mitigation measures (or sub-measures) for burrowing owl (*Athene cunicularia*), nesting birds, and artificial nighttime lightning.

Response 4a-5

New and revised mitigation measures as recommended by CDFW, with some modifications, have been identified and incorporated into the Final SEIR, as provided in responses to comments 4a-6 through 4a-14 below. Incorporation of these new mitigation measures and revisions to existing mitigation measures further supports the Draft SEIR's conclusion that biological resources impacts are mitigated to less than significant levels.

Comment 4a-6

1) Assessment of Biological Resources

   Page 3 of the Project's Biological Report indicates that biological surveys over the Project areas, including the quarry and proposed new pipeline, were conducted in October 2014, April and October of 2016, and March and April of 2017.

   CDFW generally considers biological field assessments for wildlife to be valid for a one-year period. Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts, that special emphasis should be placed on environmental resources that are rare or unique to the region, and that significant environmental impacts of the proposed Project are adequately investigated and discussed. CDFW recommends that the DSEIR is revised to include the findings of a complete, recent inventory of rare, threatened, endangered, and other sensitive species located within the footprint of proposed Well #3 and its associated pipeline and within offsite areas with the potential to be affected, including California Species of

> Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511). Based on findings from a recent biological inventory, CDFW recommends that the DSEIR is revised to include an analysis of direct, indirect, and cumulative impacts to biological resources and identification of appropriate avoidance, minimization, and mitigation measures.

Response 4a-6

Consistent with the CEQA Guidelines, the analysis and conclusions in the Draft SEIR are based on detailed knowledge of the regional setting. Special emphasis has been placed on regionally rare or unique environmental resources, and potentially significant impacts are adequately investigated and discussed.

No evidence has been presented to suggest that the environmental setting for the project has changed since the time the biological surveys referenced by the commentor were conducted. The Draft SEIR's discussion of the environmental setting for the project, which is based in part on these surveys, adequately describes the physical environmental conditions as they existed at the time the notice of preparation was published. [See CEQA Guidelines Section 15125(a)(1).] However, these conditions may change over time. Therefore, in light of the long-range timeframe for implementation of the project in this case, mitigation measures have been added and/or revised to require preparation of focused biological surveys prior to vegetation removal or ground-disturbing activities associated with specific components of the project. See also Responses 4a-7 through 4a-13).

As noted in Section 4.2.1.3, "Biological Resource Conditions at Present," of the Draft SEIR, the discussion of biological resources conditions at the Quarry Well No. 3 site and associated pipeline alignment are based on the Biological Resources Technical Report (BRTR) prepared by Aspen Environmental Group in 2019 (Draft SEIR Appendix D-1), the Jurisdictional Delineation prepared by Hernandez in 2016 (Draft SEIR Appendix D-2), and the Biological Opinion issued by USFWS in 2019 (Draft SEIR Appendix D-3). These materials update information contained in the 2008 Final EIR concerning the regional setting for these components of the project. Furthermore, on June 15, 2023, a senior biologist from Aspen Environmental Group visited the project site and determined that the site conditions remain consistent with those described in the BRTR provided as Appendix D-1 to the Draft SEIR. A copy of the letter dated August 7, 2023, from Aspen Environmental Group summarizing the findings of the June 15, 2023, biologist site visit is provided as Appendix D to the Final SEIR.

The discussion of biological resource conditions at the off-site mitigation sites is based on the Habitat Mitigation and Monitoring Plan (HMMP) prepared by Dudek in 2021 (Draft SEIR Appendix D-4). However, the proposed project does not propose any physical alterations or other changes with respect to the Old Kane Springs Road site. In addition, the proposed restoration of the Viking Ranch site would be subject to the San Diego County Resources Protection Ordinance (see San Diego County, Tit. 8, Div. 6, Chap. 6) and the Habitat Mitigation and Monitoring Plan (HMMP; Draft SEIR Appendix D-4), which prescribe approved measures to protect biological resources.

Comment 4a-7

> The Project occurs in and adjacent to U.S. Fish and Wildlife Service (USFWS) critical habitat for Peninsular bighorn sheep (Ovis canadensis) and has the potential to impact this species both directly and indirectly. For example, Peninsular bighorn sheep rely on groundwater-dependent vegetation, especially during the dry summer months. Development of Well No. 3 may impact Peninsular bighorn sheep through drawdown of groundwater that results in fewer sources of forage plants. CDFW recommends that Imperial County seek current data on Peninsular bighorn sheep occurrence in the Project area in consultation with CDFW wildlife biologists (contact Jacob Skaggs at Jacob.Skaggs@Wildlife.ca.gov for more information) to ensure that data are recent and that direct and indirect impacts to this species from Project activities have been adequately analyzed in the CEQA document. CDFW recommends that the results of this consultation be included in a revised DSEIR.

Response 4a-7

The following excerpt from the Recovery Plan for bighorn sheep in the Peninsular Ranges (USFWS 2000), which is cited in the Biological Resources Technical Report and Biological Opinion (Appendices D-1 and D-3 to the Draft SEIR), supports a conclusion that any drawdown of water resulting from the development of Well No. 3 would not have a significant impact on Peninsular bighorn sheep (PBS):

> In the Peninsular Ranges, bighorn sheep use a wide variety of plant species as their food source. Turner (1973) recorded the use of at least 43 species, with browse being the food category most frequently consumed (Turner 1976, Scott 1986). Cunningham and Ohmart (1986) determined that the bighorn sheep diet in Carrizo Canyon (at the south end of the U.S. Peninsular Ranges) consisted of 57 percent shrubs, 32 percent forbs, 8 percent cacti, and 2 percent grasses. Scott (1986) and Turner (1976) reported similar diet compositions at the north end of the range. Plant species eaten by bighorn sheep in the Peninsular Ranges were also reported by Jorgensen and Turner (1973) and Weaver et al. (1968). Diet composition varied among seasons (Cunningham and Ohrnart 1986, Scott 1986), presumably because of variability in forage availability, selection of specific plant species during different times of the year (Scott 1986), and seasonal movements of bighorn sheep. In Arizona, bighorn sheep also used a wide variety of forage species throughout the year to cope with the changing desert environment (Miller and Gaud 1989).
>
> Three native vegetation communities were mapped within the Well No. 3 project area including Creosote Bush – White Bursage Scrub, Creosote Bush Scrub, and Smoke Tree Woodland. These communities are typically of low species diversity and plant forms consist of annual grasses and herbs, sub-shrubs, and perennial shrubs. Annual grasses and herbs, and sub-shrubs are typically shallow rooted species that are not dependent

> upon groundwater for growth, reproduction and/or seed germination and plant establishment.
>
> Some perennial desert shrubs such as mesquite (Prosopis sp.) are dependent upon groundwater resources in the desert as an adaptation to limited surface water resources. However, mesquite is not present within the Well No. 3 project area nor in the vicinity of the well site. The three perennial shrubs found within the vicinity of Well No. 3 are creosote (Larrea tridentata), Ocotillo (Foquieria splendens), and smoke tree (Psorothamnus spinosus). In contrast to mesquite, these shrubs have adopted different survival strategies that do not rely on groundwater resources. Typically, these species form a wide root system within the top 36 inches of the soil profile. The strategy relies on capturing as much surface moisture as possible during rain events. Water is conserved through leaf structure and waxy leaf coatings that reduce water loss through the leaf stomata and reduced photosynthetic activity during high water stress periods.
>
> Any drawdown of groundwater located hundreds of feet below the ground surface will not affect native desert plant communities within the Well No. 3 project area because none of the species present at the site directly access deep groundwater and are not dependent upon this water source. Furthermore, groundwater drawdown would have no effect on infiltration rates of the soil within the project area because infiltration is determined by soil texture, organic content, and other physical and chemical soil properties. Therefore, there are no periodicity issues related to potential changes to standing water and surface water availability to plant and wildlife species after a rainfall event. Lastly, an analysis of the potential groundwater drawdown by operation of Well No. 3 found that drawdown within 1 mile of the well would be on the order of 0.11 feet, or about 1.3 inches (Bookman-Edmonston, 2002). This negligible drawdown will have no effect on PBS forage within the vicinity of Well #3.

Well No. 3 and associated pipeline alignment are not within PBS critical habitat (Draft SEIR Figure 4.2-3, page 4.2-17).

The County contacted CDFW Biologist Jacob Skaggs to obtain the data referenced by the commentor. This additional data was provided via email on August 17, 2023, and August 24, 2023, which are included in this Final SEIR as Letter 4b and Letter 4c, respectively. The data generally consists of GPS radio collar data collected in the project area between 2015 and 2022 showing the range and seasonal movement patterns of the local PBS population. This data is substantially the same as that provided previously by CDFW and used to support preparation of both the 2019 SEIS and this SEIR. The data are accepted and incorporated into the SEIR's description of the environmental setting (see Chapter 3, "Draft SEIR Errata," Section 3.2.22). The reader is also referred to Response 4a-4, Responses 4b-1 through 4b-6, and Responses 4c-1 through 4c-4 for further discussion of the data and analysis provided by CDFW.

Comment 4a-8

> Additionally, because quarry expansion activities will impact different areas of undisturbed habitat over an 80-year period, CDFW recommends that additional surveys for rare, threatened, endangered, and other sensitive species

are conducted over undisturbed areas proposed for quarry expansion prior to ground disturbance or vegetation removal activities.

CDFW recommends that Imperial County add in a revised DSEIR the following mitigation measure:

Mitigation Measure BIO-[A]: Assessment of Biological Resources

Prior to adoption of the CEQA document and Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.

Response 4a-8

The County accepts the commentor’s recommendation that additional surveys for rare, threatened, endangered, and other sensitive species be conducted over undisturbed areas proposed for quarry expansion prior to ground disturbance or vegetation removal activities. Because the physical conditions within an area can change over time, and in light of the long-range timeframe for implementation of the project in this case, mitigation measures have been added and/or revised to require preparation of focused biological surveys prior to vegetation removal or ground-disturbing activities associated with specific components of the project.

The additional and revised mitigation measures are discussed in Responses 4a-6 through 4a-14 and are listed in Chapter 3, "Draft EIR Errata." Where an additional or revised mitigation measure differs from the language proposed by the commentor, an explanation for the modification is provided in Chapter 3. Incorporation of these new and revised mitigation measures amplifies the Draft SEIR's conclusion that potential biological resources impacts are mitigated to less than significant.

See Chapter 3, "Draft SEIR Errata," Section 3.2.36. Proposed Mitigation Measure BIO-[A] has been added to the Draft SEIR as Mitigation Measure 4.2-2c as shown below:

> The potential PBS direct habitat impacts would be minimized, offset, or reduced over time through implementation of the following measures (see Section 4.2.4, "Project Impacts and Mitigation Measures," for the full text of each measure):
>
> - *2008 EIR/EIS:*
>   - *MM 3.5-1d (Peninsular Bighorn Sheep)*
> - *2019 SEIS:*
>   - *MM 3.4-5 (Interim Weed Management Plan)*
>   - *MM 3.4-10 (Peninsular Bighorn Sheep Habitat Mitigation)*
>
> Implement the following new mitigation measure:
>
> ***Mitigation Measure 4.2-2c:*** *Assessment of Biological Resources: Prior to construction activities for Quarry Well No. 3, the associated pipeline, and the Viking Ranch Restoration Site, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the construction footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code Section 3511), will be completed. Species to be addressed should include all "endangered, rare or threatened species" as defined in CEQA Guidelines Section 15380. The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.*
>
> **Level of Significance After Mitigation:** Less than significant.

Comment 4a-9

2) Burrowing Owl

Burrowing owl (Athene cunicularia) is a California Species of Special Concern. Take of individual burrowing owls and their nests is defined by Fish and Game Code section 86, and prohibited by sections 3503, 3503.5, and 3513. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703 et seq.). Take is defined in Fish and Game Code section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Page 33 of the Project's Biological Resources Technical Report dated March 2019 (Biological Report) indicates that suitable burrowing owl nesting and foraging habitat is present throughout the project area, and this species is considered to have moderate potential to nest in the Project area. The Biological Report also states that a single burrowing owl was observed during surveys for the project area in October 2014, and that subsequent surveys of the Project area conducted during the breeding season did not detect any burrowing owls.

Importantly, because the Project's quarrying activities will occur over an 80-year period and undisturbed areas will be impacted at different times, CDFW recommends that focused and pre-construction burrowing owl surveys are completed each time the Project conducts ground disturbance and vegetation removal activities in a new undisturbed area.

Although the DSEIR includes Mitigation Measure 3.4-9 for burrowing owl, CDFW considers the measure to be inadequate in scope and timing to appropriately avoid, minimize, and mitigation impacts to burrowing owl. CDFW recommends that Imperial County revise Mitigation Measure 3.4-9 in a revised DSEIR, with additions in **bold** and removals in ~~strikethrough~~:

Mitigation Measure 3.4-9: Burrowing Owl Avoidance

Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with all Project components (expansion of quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch) over the lifetime of the Project. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent, in coordination with BLM, shall prepare a Burrowing Owl Plan that shall be submitted to CDFW and U.S. Fish and Wildlife Service (USFWS) for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval.

Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the *Staff Report* on *Burrowing Owl Mitigation.* If the

> **preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities.** ~~Burrowing Owl Avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation (March 2012), including provision of replacement burrows prior to the exclusion.~~

Response 4a-9

See Response 4a-8. Mitigation Measure 3.4-9 on Draft SEIR page 4.2-47 has been revised as shown below. Where these revisions differ from the language proposed by the commentor, an explanation for the modification is provided in Chapter 3, "Draft SEIR Errata,". See Chapter 3, Section 3.2.37 for the final version of Mitigation Measure 3.4-9.

> ***Mitigation Measure 3.4-9:*** *Burrowing Owl Avoidance<u>:</u>~~. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation (March 2012), including provision of replacement burrows prior to the exclusion.~~ <u>Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with expansion of quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch over the lifetime of the project. If resident or nesting burrowing owls are detected during the focused surveys, the qualified biologist and project</u>*

proponent, in coordination with BLM, shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing the activities specified above. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been revaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. The Burrowing Owl Plan shall identify adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The project proponent shall implement the Burrowing Owl Plan following CDFW review and approval.

Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys shall be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, the project activities specified above shall be immediately halted until pre-defined avoidance and minimization measures contained in the Burrowing Owl Plan have been implemented.

Comment 4a-10

3) Nesting Birds

It is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Fish and Game Code sections 3503, 3503.5, and 3513 afford protective measures as follows: section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by Fish and Game Code or any regulation adopted pursuant thereto. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703 et seq.).

Page 4.2-26 indicates that suitable foraging and nesting habitat for protected bird species, as well as "stopover" habitat for migratory songbirds, is found throughout the Project area. Although the DSEIR includes a sub-measure in Mitigation Measure 3.4-8 for migratory birds, CDFW considers the measure to be insufficient in scope and timing to reduce impacts to a level less than significant. CDFW recommends that disturbance of occupied nests of migratory birds and raptors within the Project site and surrounding area be avoided **any time birds are nesting on-site**.

Importantly, because the Project's quarrying activities will occur over an 80-year period and undisturbed areas will be impacted at different times, CDFW recommends that pre-construction nesting bird surveys are completed each time the Project conducts ground disturbance and vegetation removal activities in a new undisturbed area.

CDFW recommends Imperial County revise the following sub-measure in Mitigation Measure 3.4-8, with additions in **bold** and removals in strikethrough:

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures

[…]

~~To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.~~ **Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with all Project components (the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch) and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a**

qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.

[…]

Response 4a-10

See Response 4a-8 and Response 5b-3. Mitigation Measure 3.4-8 on Draft SEIR page 4.2-52 has been revised as shown below. Where these revisions differ from the language proposed by the commentor, an explanation for the modification and the final version of the measure is provided in Chapter 3, “Draft SEIR Errata,” Section 3.2.34.

Mitigation Measure 3.4-8*: Wildlife Impact Avoidance and Minimization Measures: USG will implement the following measures throughout the life of the project (e.g., Plant and Quarry operations).*

- To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch and over the lifetime of the project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys for any of the activities specified above, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on the nature of the planned project activities, species-specific disturbance tolerance, location of the nest, and nest and buffer monitoring results.

Established buffers shall remain on-site until a qualified biologist determines if the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the project has been completed. A qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.

[…]

Comment 4a-11

4) Special-Status Bats

Page 4.2-24 of the DSEIR indicates that several special-status bats have at least a moderate potential to forage over the Project area, including the following California Species of Special Concern: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis californicus*), and pocketed free-tailed bat (*Nyctinomops femorosaccus*). The DSEIR further indicates that the gypsum cliffs in the quarry expansion areas and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. Project activities associated with the expansion of mining operations may impact bat roosts and result in injury or mortality to bats. Also, any artificial nighttime lightning associated with the Project may also negatively impact bats, and details on lighting plans and lightning specifications and appropriate avoidance, minimization, and mitigation measures are needed (see section below on Artificial Nighttime Lighting).

Page 4.2-59 of the EIR states that potential impacts to bats would be avoided or minimized through Mitigation Measure 3.4-8 (Wildlife Impact Avoidance and Minimization Measures). However, it is unclear which sub-measure in Mitigation Measure 3.4-8 would apply to bats. CDFW recommends focused surveys for the special-status species of bats discussed above are conducted prior to quarry expansion activities to inform appropriate avoidance, minimization, and mitigation measures. CDFW recommends that Imperial County add the following mitigation measure to a revised DSEIR:

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats

Prior to the initiation of Project activities within suitable bat roosting habitat, Imperial County shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.

If active hibernacula or maternity roosts are identified in the work area or 500 feet extending from the work area during preconstruction surveys, for maternity roosts, quarry expansion activities into undisturbed habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.

A minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If

> **avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.**

Response 4a-11

See Responses 4a-8, 5b-4, and 5b-5. Proposed Mitigation Measure BIO-[B], as shown below, was added as a provision to existing Mitigation Measure 3.4-8 on Draft SEIR page 4.2-52. Where these revisions differ from the language proposed by the commentor, an explanation for the modification and the final version of the measure is provided in Chapter 3, “Draft SEIR Errata,” Section 3.2.34.

- *Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats: Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply:*
  - *For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet*

ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.

- *For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques.*

Comment 4a-12

5) Artificial Nighttime Lighting

Page ES-18 of the DSEIR includes Mitigation Measure 3.4-8 that indicates the Project will "avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky." However, the DSEIR lacks a discussion of the lighting plans and lighting specifications that will be used across all Project components including quarry expansion activities, Well #3 and associated pipeline construction, and proposed mitigation sites. CDFW recommends that the DSEIR is revised to include a discussion of lightning [sic] plans and lightning [sic] specifications proposed to be used across all the Project's components to allow CDFW to conduct a meaningful review and provide expertise on activities that have the potential to adversely affect fish and wildlife resources.

Additionally, because the Project is located within and adjacent to open-space areas that support Fully Protected Peninsular bighorn sheep (Ovis canadensis), several special-status species of bats, migratory birds that fly at night, and other nocturnal and crepuscular wildlife, CDFW recommends the DSEIR is revised to include an analysis of the direct, indirect, and cumulative impacts of artificial nighttime lighting expected to adversely affect biological resources surrounding the Project site. In general, available research indicates that artificial nighttime lighting alters ecological processes including, but not limited to, the temporal niches of species; the repair and recovery of physiological function; the measurement of time through interference with the detection of circadian and lunar and seasonal cycles; the detection of resources and natural predators; and navigation[1]. Further, many of the effects of artificial nighttime lighting on population- or ecosystem-level processes are still poorly understood suggesting that a precautionary approach should be taken when determining appropriate avoidance and minimization measures concerning artificial nighttime lighting.

Regarding impacts on bats, including the California Species of Special Concern discussed in the previous section, while artificial nighttime lighting can benefit some opportunistic bat species by providing a foraging resource where insect prey is attracted to lights,[2] numerous studies have shown that direct lighting on roost structures can have profound negative effects on bats roosting in those structures. For example, the complete abandonment (or significant reduction of the bat population) at human-made structures used by roosting bats following the installation of bright artificial lighting has been documented on multiple occasions (e.g., Boldogh et al. 2007; Rydell et al. 2017). Downs et al. (2003) found that the intensity of the artificial light near the roost affected the bats' behavior during emergence more than the color of the light, while Rydell et al. (2017) found that the loss of bat colonies at structures that were newly illuminated was most apparent when light was applied in such a manner that there was no dark corridor for the bats to exit and return to the roost.

Adverse effects from the illumination of a roost structure by artificial lights extend beyond simply having the potential to discourage further use of that structure by bats. For example, Boldogh et al. (2007) found that not only did bright artificial lighting at roosts delay the

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[1] Gatson, K. J., Bennie, J., Davies, T., Hopkins, J. *The ecological impacts of nighttime light pollution: a mechanistic appraisal*. Biological Reviews, 88.4 (2013): 912-927.

[2] It should be noted that because many insects congregate around artificial light sources and die from exhaustion, long-term reductions of insect populations from light pollution is expected to have significant adverse effects for predators of insects such as bats (Hölker et al. 2010).

start of the emergence and/or prolong the duration of bats' emergence from that structure, but also juveniles at roost structures that were illuminated were significantly smaller than juveniles at roost structures that were not illuminated by bright artificial lights. The smaller body masses of juveniles at illuminated sites may be attributed to the delayed emergences at those sites, which not only reduces the total foraging time available for lactating female bats (and later, juveniles learning to hunt) each night, but also causes those bats to miss the peak insect abundance that occurs at dusk, reducing their foraging efficiency. These findings suggest that even if a maternity colony chooses to remain at a newly illuminated roost site, juvenile survivorship is negatively affected, and therefore the reproductive success of those colonies could be severely compromised.

Rydell et al. (2017) and Voigt et al. (2018) note that maintaining darkness at maternity roosts is particularly important because at these types of roosts, aggregations of bats are present consistently over a long period of time, individual bats emerge from predictable locations, and juvenile bats are learning how to fly. Illumination of a maternity roost renders the colony more vulnerable to opportunistic predators such as raptors and owls, and predator-avoidance behaviors such as delayed emergence times reduce their foraging opportunities, thereby lowering juvenile survivorship. Suitable maternity roost sites are a limited resource, and if an alternate roost site is not available, extirpation of the entire colony could occur as a result of artificial lighting. Various studies (e.g., Boldogh et al. 2007; Rydell et al. 2017; Voigt et al. 2018) have concluded that because bright artificial lighting at roost structures has significant negative effects on bats, including the potential for the extirpation of an entire maternity colony, the addition of lighting near an established roost should be considered during the environmental impact review process.

To support Imperial County in avoiding, minimizing, and mitigating the impacts of artificial nighttime lighting on biological resources, CDFW recommends that Imperial County revise the following sub-measure of Mitigation Measure 3.4-8 in a revised DSEIR as follows, with additions in **bold** and removals in strikethrough:

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures

[…]

~~Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.~~ **Throughout the lifetime of the Project, the Project proponent shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all lighting for the Project is fully shielded, cast downward, reduced in intensity to the greatest extent, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). Imperial County shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.**

[…]

Response 4a-12

The 2008 DEIR (Impact 3.7-1 on page 3.7-22) describes the project's proposed lighting at the quarry site and the anticipated lighting changes that would occur with project implementation. According to the 2008 DEIR, no new buildings or operational changes are proposed, and no new lighting sources would be added to the quarry site. Thus, there would be a marginal increase in lighting and the impact was determined to be less than significant. Furthermore, the 2019 SEIS (Section 3.4.4.1 on page 3.4-6) acknowledges that nighttime lighting would have a minor and temporary effect on wildlife movement and addresses this impact through implementation of Mitigation Measure 3.4-8, "Wildlife Impact Avoidance and Minimization Measures." This measure is included in the Draft SEIR and contains the following requirement: "Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky."

The Draft SEIR and previous environmental documents adequately describe the project's proposed lighting, acknowledge the potential associated impacts, and provide mitigation measures to avoid or minimize the identified impacts. However, to more fully address these potential impacts, the commenter's proposed revisions to Draft SEIR Mitigation Measure 3.4-8 have been incorporated into the Draft SEIR.

See Chapter 3, "Draft SEIR Errata," Section 3.2.34. Mitigation Measure 3.4-8 has been revised as follows:

- *[…]*

- *Speed limits along all access roads will not exceed 15 miles per hour.*
- *Throughout the lifetime of the project, the project proponent shall avoid or limit the use of artificial light to the extent practicable during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all new lighting for the project is fully shielded, cast downward, reduced in intensity to the greatest extent practicable, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). To the extent practicable, the project proponent shall use LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling for lighting that contains toxic compounds with a qualified recycler.* ~~*Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.*~~
- *[…]*

Comment 4a-13

6) CDFW's Lake and Streambed Alteration Program

Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following: substantially divert or obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake. Note that "any river, stream, or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

Page 4.6-22 of the DSEIR indicates that the Project's Jurisdictional Delineation "identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages." The DSEIR also indicates that "Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages." Regarding the Restoration of Viking Ranch, Figure 2-6 of the DSEIR shows that restoration plans will involve removal and creation of berms, backfill of diversion ditches, installation of a grade structure, grading of ephemeral channels, and recontouring of areas of the floodplain within the Viking Ranch Project boundary.

The DSEIR includes Mitigation Measure 3.5-1f: "Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively."

In addition to this measure and to address requirements under CDFW's Lake and Streambed Alteration Program, CDFW recommends that Imperial County add the following mitigation measure to a revised DSEIR:

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program

Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.

Response 4a-13

The comment is noted. Mitigation Measure BIO-[C] as proposed by the commentor has been accepted and added to the Draft SEIR as Mitigation Measure 4.2-3. See Chapter 3, "Draft SEIR Errata," Section 3.2.38. Incorporation of this measure further supports the Draft SEIR's conclusion that biological resources impacts are mitigated to a less than significant level.

There are no drainages subject to the jurisdiction of the USACE (i.e., "waters of the United States") within the project area. Specifically, on June 22, 2020, the Navigable Waters Protection Rule went into effect thereby redefining the definition of waters of the United States to exclude "ephemeral features" as waters of the United States. As such, "ephemeral features" were no longer regulated as waters of the United States under the Clean Water Act, meaning that a USACE permit would no longer be required to discharge fill material into "ephemeral features."

USG filed a formal request with the USACE for an Approved Jurisdictional Determination (AJD) on November 10, 2020. On February 8, 2021, the USACE issued an AJD confirming that waters of the United

States are now absent from the project area. The AJD has been incorporated into the SEIR as Draft SEIR Appendix D-5 (see Chapter 3, "Draft SEIR Errata," Sections 3.2.21, 3.2.33, 3.2.38, 3.2.42) and a copy of the AJD is attached to this Final SEIR as Appendix C, "Draft SEIR Appendices Errata."

See Chapter 3, "Draft SEIR Errata," Section 3.2.38. Impact 4.2-3 has been revised and a new mitigation measure, Mitigation Measure 4.2-3, has been added as follows:

> ***Mitigation Measures:*** *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*
>
> - *2008 EIR/EIS:*
>   - *MM 3.5-1f (Agency Contacts for Impacts to Streambeds)*
> - *2019 SEIS:*
>   - *MM 3.4-13 (Future Quarry Phasing Notification and Review)*
>
> *Implement the following new mitigation measure:*
>
> ***Mitigation Measure 4.2-3:*** *Lake and Streambed Alteration Program: Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under Section 1602 of the Fish and Game Code is not required for the project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code Section 1602 resources associated with the project.*
>
> **Level of Significance After Mitigation:** Less than significant.

Comment 4a-14

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB [sic] field survey form can be filled out and submitted online at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

Response 4a-14

According to Section III, "Methods," of the 2019 Biological Resources Technical Report (BRTR) prepared by Aspen Environmental and provided as Appendix D-1 to the Draft SEIR, following plant and wildlife field surveys a CNDDB form was completed for all occurrences separated by more than 0.25 miles.

Comment 4a-15

ENVIRONMENTAL DOCUMENT FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the environmental document filing fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.)

Response 4a-15

The comment is noted. The applicable fee will be paid at the appropriate time.

Comment 4a-16

CONCLUSIONS

CDFW appreciates the opportunity to comment on the DSEIR to assist Imperial County in identifying and mitigating Project impacts to biological resources. CDFW concludes that the DSEIR does not adequately identify or mitigate the Project's significant, or potentially significant, impacts to biological resources. CDFW also concludes that the DSEIR lacks sufficient information for a meaningful review of impacts to biological resources, including a complete and accurate assessment of biological resources on the Project site. The CEQA Guidelines (§ 15088.5) indicate that recirculation is required when insufficient information in the DSEIR precludes a meaningful review. CDFW recommends that a revised DSEIR including a recent and complete assessment of impacts to biological resources (inclusive of recent data on Peninsular bighorn sheep), as well as lightning [sic] plans and design specifications, be recirculated for public comment. CDWF also recommends that revised and additional mitigation measures as described in this letter be added to a revised DSEIR to avoid or reduce significant impacts.

Response 4a-16

This comment summarizes previous comments from this letter. The reader is referred to Responses 4a-3 through 4a-14.

The Draft SEIR provides ample information to facilitate meaningful review of the potential environmental impacts of the project. Furthermore, CDFW has provided a thorough, substantial, and obviously meaningful 23-page review of the DSEIR, including numerous meaningful recommendations, based entirely on information provided by the DSEIR. Indeed, mitigation measures have been added and/or revised substantially as recommended by CDFW (See Responses 4a-6 through 4a-14).

Recirculation of a revised Draft SEIR is not required or warranted in this case. CEQA only requires recirculation of an EIR prior to certification when significant new information is added to the EIR after the Draft SEIR has been circulated for public review. Significant new information includes the identification of new significant impacts or a substantial increase in the severity of a previously identified significant impact. It could also include analysis of an alternative or mitigation measure considerably different from others previously analyzed. Recirculation is not required when new information added to the EIR merely clarifies or amplifies information already in the EIR or makes insignificant modifications to the EIR. (State CEQA Guidelines Section 15088.5(a) and (b)).

Comment 4a-17

ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

The comment is an attachment to Letter 4a and is provided in its entirety as Appendix E, "California Department of Fish and Wildlife Mitigation Monitoring and Reporting Program," to this Final SEIR.

Response 4a-17

The commenter provides a mitigation monitoring and reporting program for the new and revised mitigation measures proposed by CDFW in Comment Letter 4a. The reader is referred to Responses 4a-3 through 4a-14 and Chapter 3, "Draft EIR Errata," for the final version of each mitigation measure referenced in the comment. A complete Mitigation Monitoring and Reporting Program for the proposed project is provided as Appendix B to this Final SEIR and will be presented to the decisionmakers for review and approval prior to taking action on the proposed project.

Letter 4b: California Department of Fish and Wildlife; August 17, 2023

Aspen Environmental prepared a technical memorandum in response to CDFW's communications with Imperial County recommending additional mitigation to address the proposed project's potential impacts to PBS. This memorandum, provided as Appendix F "Aspen Memorandum: PBS Impacts and Mitigation," to this Final SEIR, was used in the preparation of the following responses to comments.

Comment 4b-1

Please find attached updated maps showing Peninsular bighorn sheep (PBS) use in the Project area for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). Below are CDFW's additional comments for the Imperial County for the

Project, including updated analysis based on data in the attached maps and recommendation on how to avoid and reduce significant impacts to PBS.

Response 4b-1

The comment is noted. See Response 4b-2 through 4b-6 on the following pages.

Comment 4b-2

Based on GPS data collected between 2015 and 2022, PBS do not use the active mining area in the north half of the quarry but do utilize the currently undisturbed habitat within the proposed mine expansion area to the south. While the gypsum formations within the southern quarry boundary do not appear to be used much by PBS, clusters of location data surrounding the margins of the formations indicate that these areas do meet PBS needs (PCEs) particularly during the lamb-rearing and summer seasons (refer to close-up maps by season). Clusters of PBS data surrounding the gypsum formations and within the wash below the formations are most notable during the summer months (June – August). The drainages wrap around the formations and provide ephemeral water sources, and in times of drought provide forage opportunities since plants grow more readily in drainages and washes compared to the steep, rocky slopes above the formations. The washes do not make up "core PBS habitat" based on radio-collar data; however, at certain times of the year, the washes and drainages provide critical resources for PBS and are therefore just as important to survival as more frequently used areas. Furthermore, in practice, the gypsum formations next to the washes provide shade, shelter, and escape terrain regardless that it does not meet the strict definition of "escape terrain" described in the SEIR. There are no permanent water sources within the Fish Creek Mountains (FCM), yet despite this fact, radio-collared data collected from 2015 through May 2022 had not shown any movement of FCM ewes out of the area. However, in July 2022, one radio-collared ewe did move into the Coyote Mountains (south of the FCM) for a few days before returning to the FCMs. Due to the lack of permanent water sources in the FCM, small drainages that can collect and store water even for short periods of time and sustain plant growth are vital.

Radio-collared ewes do utilize the project area during the lamb-rearing season, and it is important to emphasize that the points on the map do NOT represent ALL movement data of radio-collared ewes since GPS data are only collected a few times per day, and the data only represent a small portion of the total ewe population and thus far no representation of ram use. Because there is radio-collared data within the project area during the lamb-rearing season, it is considered lamb-rearing habitat even if it doesn’t meet the definition described in the USFWS Recovery Plan. A study conducted for CDFW by a graduate student (Kendall Hines), titled “Post-partum habitat use for Peninsular bighorn sheep (Ovis canadensis nelsoni) in Southern California, demonstrated that 3 of the 4 ewe groups studied moved closer to alluvial fan habitat during the post-partum period and that 2 of 4 ewe groups moved to lower elevation habitat. While the study was not conducted in the FCM, data indicate that ewes in the FCM also rely low elevation habitat near alluvial fans during the lambing season.

Response 4b-2

The comment summarizes GPS radio collar data collected by CDFW in the project area between 2015 and 2022 showing the range and seasonal movement patterns of the local PBS population. According to the commenter, the data indicate that PBS do not utilize the northern portion of the site that is actively mined but do utilize the undisturbed southern portion of the quarry proposed for mine expansion, particularly during lamb-rearing season (January through May) and the summer months (June through August). The washes and drainages in this area of the quarry provide ephemeral water sources and, in times of drought, forage opportunities. In addition, the adjacent gypsum formations provide shade, shelter, and escape terrain. Therefore, while the project site may not be considered “core PBS habitat” or “escape terrain” as described in the Draft SEIR (see Draft SEIR Section 4.2, “Biological Resources,” pages 4.2-12 through -15 and pages 4.2-53 and -54), it is the opinion of CDFW that the proposed quarry expansion areas in the southern portion of the site do provide critical resources for PBS important to survival, particularly in the summer months and during times of drought.

While the data provided is more recent, it is substantially the same as that previously provided by CDFW and used to support preparation of the 2019 BRTR, 2019 SEIS, and this SEIR. The data is accepted and incorporated into this SEIR as part of the environmental setting.

Comment 4b-3

Mitigation Measure 3.4-12 states that “New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies. Does the above paragraph mean that only “NEW” mining activities will not occur during the lambing season, but if new ground-disturbing activities were to start in December, that they could continue to work during the lambing season?

Response 4b-3

To clarify the intent of Mitigation Measure 3.4-12, the requirement applies to disturbances in previously undisturbed areas (i.e., the establishment phase of quarry expansion areas).

Comment 4b-4

`CDFW recommends that no mining activities occur in the southern section of the quarry boundary during the lambing season or minimally not to occur during the peak of lamb-rearing season (February – April).`

Response 4b-4

Based on the new, more recent data provided by CDFW in Comment 4b-2, CDFW recommends that mining activities in the southern portion of the quarry (i.e., the quarry expansion areas) occur outside of peak lambing season. However, Draft SEIR Mitigation Measure 3.4-12 already addresses the potential for PBS disturbance during lambing season by prohibiting new ground-disturbing activities within designated critical habitat during the lambing season. The measure further requires a biological monitor to be on-site during any new ground-disturbances and for work to stop if PBS are observed within a 0.25-mile radius of the activity. In addition, if a PBS enters an active work area all heavy equipment operations must be halted until it leaves.

Conservation Measure 11 provided in the project's Biological Opinion issued by USFWS (see Draft SEIR Appendix D-3) provided further avoidance and minimization measures that were not included in the 2019 SEIS and were inadvertently left out of Draft SEIR Mitigation Measure 3.4-12 (PBS Avoidance and Minimization). These measures include minimizing blasting during the lambing season, reducing noise levels from mobile or stationary equipment and quarrying activities such as loading and unloading rock, and potentially providing a supplemental water source to ensure water availability to PBS during summer drought. These existing requirements have been added to Draft SEIR Mitigation Measure 3.4-12, consistent with Biological Opinion Conservation Measure 11. See Chapter 3, "Draft SEIR Errata," Section 3.2.32. Mitigation Measure 3.4-12 has been revised as follows:

> ***Mitigation Measure 3.4-12:*** *PBS Avoidance and Minimization. USG will implement the following measures throughout the life of the project.*
>
> - *New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.*
> - *Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.*
> - *The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities and will walk the perimeter of the Quarry expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.*

- *If a PBS enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.*
- *Fencing installed anywhere within the Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to PBS.*
- *When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).*
- *Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).*

In consultation with BLM, CDFW, and USFWS, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought. As shown in Chapter 3, “Draft SEIR Errata,” Section 3.2.28, the Draft SEIR has been revised to note that formal consultation with the USFWS under Section 7 of the FESA for PBS has been completed as required by Mitigation Measure 3.5-1d, and a Biological Opinion (BO) was issued for the project by USFWS (see Draft SEIR Appendix D-3). The USFWS concluded in its BO that project implementation, including the provisions of Mitigation Measure 3.4-12 described above, would not jeopardize the continued existence of PBS. This “no jeopardy” opinion was based on the USFWS’s conclusions that (1) PBS almost exclusively use the hillsides and slopes outside of the quarry and would thus be avoided by project activities; (2) that the presence of PBS in proximity to mine operations ongoing since 1921 indicate that the sheep acclimate to human presence and noise and the existing distribution of sheep around the quarry will be unaffected by quarry expansion; (3) project effects on PBS reproduction would be avoided or minimized by required mitigation; and (4) ample critical habitat is available to PBS in the surrounding mountains. These conclusions are supported by existing scientific literature which indicates that the Nelson’s bighorn sheep (a different population of the same species as PBS) will acclimate to mining activities.

Based on the above discussion, proposed mining activities are not expected to cause PBS to alter its local distribution. Given that the more recent data provided by CDFW is substantially the same as that previously provided, no evidence has been provided to challenge this conclusion and no new potential impacts have been identified that would require further mitigation beyond that already required for the project. Therefore, CDFW’s recommendation that mining activities be prohibited in the southern section of the project site during the lambing season has not been incorporated into the SEIR.

The Applicant will be required to continue coordination with CDFW after completion of the CEQA process to obtain necessary project permitting. Thus, while not required as a part of this SEIR to address any impact under CEQA, CDFW may still require this additional mitigation as a condition of any permits issued for the project.

Comment 4b-5

Regardless, the mining expansion will result in loss of habitat for the ewes in this area. The magnitude of this loss will not be known without the continuation of radio-collar monitoring activities. Mitigation measure 3.5-1d, requires USFWS to provide a Biological Opinion about "whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them". However, in order to make this assessment, USFWS will rely on data collected by CDFW; and therefore, mitigation funds should be made available to CDFW for on-going radio-collaring activities and field monitoring studies within the FCM.

Radio-collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE's are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG. However, we do not think a guzzler is currently warranted without first careful study and consideration since artificial water sources can often result in increased predation. So far we have had no documented cases of mountain lion predation in the FCM. Currently, there are 3 satellite-collars in the FCM that are scheduled to stop functioning before the end of the year. Once these collars stop functioning we will no longer be able to track the effects of future mining activity upon PBS. Therefore, CDFW recommends that funds be provided to CDFW for maintaining radio-collars on PBS over the life of the mining project. By August 24, 2023, CDFW will provide more specific recommendations on maintaining radio collars on PBS over the life of the mining project.

Response 4b-5

CDFW recommends that additional funding be provided by the applicant to continue radio collar monitoring to determine the effects of the proposed mining expansion. However, Draft SEIR Mitigation Measure 3.4-11 (see page 4.2-47) already requires the Applicant to fund radio collaring and monitoring of PBS over a 10-

year period to identify any potential divergence of local PBS behavior from previous studies of other populations around mines. Further, Mitigation Measure 3.4-13 (see Draft SEIR page 4.2-48) requires BLM, USFWS, and CDFW review of PBS monitoring data prior to new mining activities in the expansion areas nearest the highest PBS occurrences. As discussed in Response 4b-4, the commenter fails to identify a new potential impact that would require further mitigation beyond that already required for the project. Therefore, CDFW's recommendation that the Applicant fund radio collaring and monitoring of PBS for the life of the proposed quarry, rather than the ten years already required, has not been incorporated into the SEIR.

The Applicant will be required to continue coordination with CDFW after completion of the CEQA process to obtain necessary project permitting. Thus, while not required as a part of this SEIR to address any impact under CEQA, CDFW may still require this additional mitigation as a condition of any permits issued for the project. Mitigation Measure 3.4-11 has been revised to reflect the potential for further mitigation to be implemented as part of the regulatory permit process. See Chapter 3, "Draft SEIR Errata," Section 3.2.36 for the final version of this mitigation measure. Draft SEIR page 4.2-57, first paragraph was revised as follows:

> ***Mitigation Measures:*** *Implement the following existing mitigation measures (see Section 4.2.4 for the full text of each measure):*
>
> - 2008 EIR/EIS:
>   - MM 3.5-1d (Peninsular Bighorn Sheep)
> - 2019 SEIS:
>   - MM 3.4-6 (Mining Activity Monitoring and Reporting)
>   - MM 3.4-7 (Worker Education Awareness Program)
>   - MM 3.4-8 (Wildlife Impact Avoidance and Minimization Measures)
>   - ~~MM 3.4-11 (Peninsular Bighorn Sheep Monitoring and Reporting)~~
>   - MM 3.4-12 (Peninsular Bighorn Sheep Avoidance and Minimization Measures)
>
> *Implement existing mitigation measure 3.4-11, as revised below:*
>
> ***Mitigation Measure 3.4-11:*** *PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by funding the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW.*
>
> *Implementation of this measure, combined with the other measures provided in this SEIR, will reduce impacts to PBS to a less than significant level; however, additional mitigation measures may be required through the regulatory permit process.*

Comment 4b-6

CDFW is available for a meeting to discuss these comments and recommendations with Imperial County. Please let us know if you have any questions.

Response 4b-6

The comment is noted. The County provided CDFW with an additional opportunity to review and provide further comment on an administrative draft version of this Final SEIR. See Comment Letters 4d and 4e.

Letter 4c: California Department of Fish and Wildlife; August 24, 2023

Aspen Environmental prepared a technical memorandum in response to CDFW's communications with Imperial County recommending additional mitigation to address the proposed project's potential impacts to PBS. This memorandum, provided as Appendix F, "Aspen Memorandum: PBS Impacts and Mitigation," to this Final SEIR, was used in the preparation of the following responses to comments.

Comment 4c-1

Below are the California Department of Fish and Wildlife's (CDFW) additional comments and recommendations for the County of Imperial on the Draft Subsequent Environmental Impact Report for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). This email follows up on previous biological expertise provided to the County of Imperial by CDFW in a comment letter dated June 2, 2023 (attached) and an email (further below) dated August 17, 2023.

Response 4c-1

The comment is noted. See Comments 4c-2 through 4c-4 and Letters 4a and 4b.

Comment 4c-2

Peninsular bighorn sheep (PBS) from the Vallecito Mountains (VM) also utilize the Fish Creek Mountains (FCM) on a seasonal basis within the West Side of the FCM. See the attached map that shows the breakdown of use in the FCM by both the FCM ewe group and the VM ewe group. To maintain a representative sample of collars within the FCM and VM populations, CDFW recommends that funds be provided to CDFW for maintaining a combination of GPS and Very High Frequency (VHF) collars on ten (10) PBS in the FCM and ten (10) PBS in the VM for the life of the mining project. See the table below for estimated costs for the work over a 10-year period:

This estimate includes 3 helicopter surveys and 3 captures over a 10-year period. Captures are for both the VM and FCM and surveys for just the FCM.

	Cost/unit	No. of units	10-year Study Cost	Comments
3-day Helicopter capture in Fish Creke and Vallecito Mtns.	$69,291.00	3	$207,873	Three 3-day captures on years 1, 4, and 7
20 Satellite Collars/capture (3-day capture)	$51,205	3	$153,615	Satellite collar life estimated at 3 years
1-day helicopter survey in Fish Creek Mountains	$40,791.00	3	$122,373	3 surveys at years 2, 6, and 10
ES Capture planning & implementation @ 88 hours/capture	$6,176.48	3	$18,529	Includes capture plan, capture prep, and managing capture
ES Survey planning & implementation @ 20 hours/survey	$1,403.75	3	$4,211	Includes survey plan, survey prep, and managing survey
ES GIS mapping & Analysis @ 10 hours/month	$701.87	120	$84,225	No. of units: 12 months/year at 10 years
All costs total			$590,826	
Collar, capture and surveys only total			$483,861	

Additionally, regarding Mitigation Measure 3.4-11 (PBS Monitoring and Reporting), this measure is the same as found in the 2019 Draft Supplemental Environmental Impact Statement. However, the monitoring measure presented in the 2019 (and 2023) document is different from the monitoring proposal CDFW discussed and provided to the U.S. Fish and Wildlife Service and the Bureau of Land Management. CDFW recommends that this measure is revised to indicate that funding will be provided for the purchase of radio-collars and capture of ten (10) PBS in the Fish Creek Mountains and ten (10) PBS in the Vallecito Mountains, not ten total in both areas.

Response 4c-2

CDFW recommends revisions to Draft SEIR Mitigation Measure 3.4-11 to require the Applicant to fund capturing, radio-collaring, and monitoring of ten additional sheep for the duration of project activities.

See Response 4b-5 regarding the provision of PBS monitoring for the duration of project activities. This additional mitigation is not required to address any new impacts under CEQA and was not added to this SEIR.

See also Response 4b-4. The more recent PBS monitoring data and associated analysis provided by CDFW are substantially the same as that previously provided and used to support preparation of the 2019

BRTR, 2019 SEIS, and this SEIR. No new or substantially more severe impact related to PBS has been identified that would require further mitigation beyond that already required for the project. Therefore, CDFW's recommendation that the Applicant provide funding for the capture, radio collaring, and monitoring of an additional ten PBS (for a total of 20) has not been incorporated into the SEIR.

The Applicant will be required to continue coordination with CDFW after completion of the CEQA process to obtain necessary project permitting. Thus, while not required as a part of this SEIR to address any impact under CEQA, CDFW may still require this additional mitigation as a condition of any permits issued for the project. See Chapter 3, "Draft SEIR Errata," Section 3.2.36.

Comment 4c-3

Additionally, monitoring under 3.4-11 should be for the life of the project with evaluation of collar numbers, capture hours, and funding allocation made every 10 years.

Response 4c-3

See Responses 4b-4 and 4b-5. CDFW's recommendation that the Applicant fund radio collaring and monitoring of PBS for the life of the proposed quarry, rather than the ten years already required, has not been incorporated into the SEIR.

Comment 4c-4

Again, CDFW is available for a meeting with the County of Imperial to answer any questions regarding these comments and recommendations.

Response 4c-4

The comment is noted. The County provided CDFW with an additional opportunity to review and provide further comment on an administrative draft version of this Final SEIR. See Comment Letters 4d and 4e.

Letter 4d: California Department of Fish and Wildlife; August 31, 2023

Aspen Environmental prepared a technical memorandum in response to CDFW's communications with Imperial County recommending additional mitigation to address the proposed project's potential impacts to PBS. This memorandum, provided as Appendix F, "Aspen Memorandum: PBS Impacts and Mitigation," to this Final SEIR, was used in the preparation of the following responses to comments.

Comment 4d-1

Thank you for incorporating most of CDFW's comments and recommendations into the DSEIR for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). CDFW has the following additional comments and recommendations based on the proposed edits to mitigation measures in the DSEIR that were submitted to CDFW on August 25, 2023.

Response 4d-1

The comment indicates that the Applicant's proposed modifications (see Letter 5b) to mitigation measures proposed by CDFW (see Letter 4a) have been accepted with two exceptions as noted in Comments 4d-2 and 4d-3 below. See Responses 4d-2 and 4d-3.

Comment 4d-2

For Mitigation Measure 3.4-9: Burrowing Owl Avoidance If the preconstruction surveys confirm occupied burrowing owl habitat, CDFW recommends the County of Imperial and Project applicant coordinate with CDFW to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW prior to commencing Project activities. Appropriate avoidance, minimization, and mitigation measures should be determined on a case-by-case basis in coordination with CDFW and can vary depending on the circumstances such as location of burrow and distance from Project activities, type of project activities nearby, time of year, status of young, and other factors.

Response 4d-2

The commenter reiterates CDFW's previous comment regarding Mitigation Measure 3.4-9 (see Comment 4a-9). The commenter again recommends that the County and Applicant coordinate with CDFW to conduct an impact assessment and develop avoidance and minimization measures in the event preconstruction surveys confirm occupied burrowing owl habitat within the footprint of the proposed activities. The comment indicates that the CDFW rejects the Applicant's proposed modification to Mitigation Measure 3.4-9 related to conducting an impact assessment (see Comment 5b-2).

The County has determined that the final version of Mitigation Measure 3.4-9, as shown in Chapter 3, "Draft SEIR Errata," Section 3.2.37, provides greater clarity and stronger performance standards than that proposed by CDFW to better avoid and minimize potential impacts to individual Burrowing owls detected on the project site through pre-construction surveys. The final measure is consistent with the intent of both the CDFW's and the Applicant's comments and will adequately address the project's potential impacts to Burrowing owl.

Comment 4d-3

For Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures CDFW continues to recommend that Imperial County compensate at no less than 2:1 for permanent impacts to roosting habitat for special-status bat species. If the Project results in a permanent loss of roosting habitat for special-status bat species, this action is appropriately compensated through the perpetuity conservation of other roosting habitat for special-status bat species.

Response 4d-3

The commenter reiterates CDFW's previous comment regarding Mitigation Measure 3.4-8 (see Comment 4a-11) and again recommends that the County compensate for permanent impacts to roosting habitat for special-status bat species at a ratio of no less than 2:1. The comment indicates that CDFW rejects the Applicant's proposed modification to Mitigation Measure 3.4-8 (see Comment 5b-5).

As discussed further in Comment and Response 5b-5, the County has determined that the proposed compensation for permanent impacts to roosting habitat is not necessary, as there is abundant suitable habitat on public lands throughout the surrounding area.

See Chapter 3, "Draft SEIR Errata," Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Letter 4e: California Department of Fish and Wildlife; October 27, 2023

Aspen Environmental prepared a technical memorandum in response to CDFW's communications with Imperial County recommending additional mitigation to address the proposed project's potential impacts to PBS. This memorandum, provided as Appendix F, "Aspen Memorandum: PBS Impacts and Mitigation," *to this Final SEIR, was used in the preparation of the following responses to comments.*

Comment 4e-1

The California Department of Fish and Wildlife (CDFW) submitted comments and recommendations to the County of Imperial (County) on the draft Subsequent Environmental Impact Report (SEIR) for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH# 2001121133) in a letter dated June 2, 2023, and in emails submitted on August 17, 2023, and August 24, 2023. On October 20, 2023, CDFW received a copy of the Admin Final SEIR that included responses to CDFW comments and recommendations and revisions to the SEIR. Thank you for incorporating many of CDFW's recommendations into the SEIR and for providing CDFW the opportunity to provide additional comments, which are included below.

Response 4e-1

The comment is noted. CDFW's previous letter and emails are provided in this Final SEIR as Letters 4a through 4d.

Comment 4e-2

Funding to maintain collars on 20 Peninsular bighorn sheep (*Ovis canadensis)* over the lifetime of the Project Regarding CDFW's recommendation in its August 24, 2023, email that funds are provided to CDFW for maintaining a total of 20 GPS and Very High Frequency (VHF) collars on Peninsular bighorn sheep (PBS; Fully Protected Species) in the Fish Creek Mountains (FCM) and Vallecito Mountains (VM), the County did not incorporate this recommendation into the SEIR indicating "the commenter fails to identify a new potential impact that would require further mitigation beyond that already required for the project." The Project's potential impacts to PBS are discussed in CDFW's August 17, 2023, email, where it was indicated that "the mining expansion will result in loss of habitat for the ewes in this area. The magnitude of this loss will not be known without the continuation of radio-collar monitoring activities. […] Radio-collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE's [(Primary Constituent Elements)] are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG." In its August 24, 2023, email, CDFW indicates that a total of 20 collars are needed to "maintain a representative sample of collars with the FCM and VM populations."

CDFW also recommended in its email dated August 24, 2023, that funding is provided for monitoring of PBS over the lifetime of the Project. The County did not incorporate this recommendation stating that "the commenter fails to identify a new potential impact that would require further mitigation beyond that already required for the project." As CDFW has discussed in its comments and recommendations, the Project's potential impacts to PBS are protracted over the 80-year timeframe of mining expansion activities, and PBS monitoring using collars over the life of the mining project is necessary to determine the extent of these potential impacts and inform appropriate avoidance, minimization, and mitigation measures. In its August 17, 2023, email, CDFW describes PBS use of the currently undisturbed habitat within the proposed mine expansion area in the southern portion of the Project area and discusses why these areas are important for PBS and their life-cycle needs. CDFW further states that "radio collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE's are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG. […] Currently, there are 3 satellite-collars in the FCM that are scheduled to stop functioning before the end of the year. Once these collars stop functioning we will no longer be able to track the effects of future mining activity upon PBS." CDFW reiterates that PBS is a Fully Protected species that may not be taken or possessed at any time, and the County is required to demonstrate that the Project is avoiding the take of PBS over its 80-year timeframe. CDFW recommends that the County and Project proponent assess the Project's long-term potential impacts to PBS through maintaining a total of 20 GPS and VHF collars on FCM and VM populations over the lifetime of the Project.

To avoid or reduce impacts to below a level of significance, CDFW recommends that the County revise Mitigation Measure 3.4-11 of the Draft SEIR with the following additions in **bold** and removals in ~~strikethrough~~:

Mitigation Measure 3.4-11: PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by **providing** funding to maintain ~~the purchase of~~ **a combination of** radio **and VHF** collars ~~and the capture of~~ **on** ten (10) PBS in the Fish Creek **and ten (10) PBS in the** Vallecito Mountains Ewe Group areas~~, to provide location monitoring data over~~ **for the life of the mining Project** ~~a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW.~~ **Evaluation of collar numbers, capture hours, and funding allocation shall be made every 10 years throughout the life of the Project in coordination with CDFW.**

Response 4e-2

See Responses 4b-4, 4b-5, 4c-2, and 4c-3. CDFW's recommended mitigation requiring funding for a total of 20 PBS radio collars and associated monitoring for the life of the proposed project has not been incorporated into the project as part of this Final SEIR. However, Mitigation Measure 3.4-11 has been revised to acknowledge that additional mitigation may be required for the project as part of the regulatory permit process. Mitigation Measure 3.4-11 represents the minimum mitigation required to reduce impacts to PBS under CEQA to a level that is less than significant and additional mitigation is not required as part of this SEIR. See Chapter 3, "Draft SEIR Errata," Section 3.2.36 for the final version of Mitigation Measure 3.4-11.

Comment 4e-3

Pursuant to the CEQA Guidelines, section 15097(f), CDFW has prepared a draft mitigation monitoring and reporting program (MMRP) for revised Mitigation Measures 3.4-11 and Mitigation Measure BIO-[B].

Response 4e-3

The commenter provides a mitigation monitoring and reporting program for the new and revised mitigation measures proposed by CDFW in Comment Letter 4e. The reader is referred to Responses 4e-2 and 4e-4 and Chapter 3, “Draft SEIR Errata,” for the final version of each mitigation measure referenced in the comment. A complete Mitigation Monitoring and Reporting Program for the proposed project is provided as Appendix B, “Mitigation Monitoring and Reporting Program,” to this Final SEIR and will be presented to the decisionmakers for review and approval prior to taking action on the proposed project.

Comment 4e-4

Compensatory mitigation for impacts to roosting habitat for special-status bats

In its June 2, 2023, letter, CDFW recommends that the County add a new Mitigation Measure BIO-[B] for Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats. CDFW appreciates that the County adopted a modified version of Mitigation Measure BIO-[B]. However, the modified version of the measure excludes the sentence “Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.” In its response submitted to CDFW on October 20, 2023, the County stated that “proposed compensation is not necessary, as there is abundant suitable habitat on public lands throughout the surrounding area.” In Comment 5b-5, the County further indicates that the “potential loss of rock crevices on the site would not significantly affect roost site availability in the Fish Creek Mountains or the surrounding region. The Project site is adjacent to the Fish Creek Mountains Wilderness managed by the BLM, comprising more than 21,000 acres, and Anza Borrego Desert State Park, comprising more than 600,000 acres. […] Both the Fish Creek Wilderness and Anza Borrego Desert State Park permanently protect extensive areas of rugged desert mountain landscapes where rock crevices suitable for bat roosting are abundant. Roosting crevice availability does not appear to limit local special status bat populations.”

CDFW notes that the presence of surrounding protected areas that may include roosting habitat for special-status bat species does not compensate for the Project’s potential permanent impacts to roosting habitat for special-status bat species. The EIR must identify potentially feasible mitigation measures that avoid or reduce each significant impact. CDFW has identified potentially feasible mitigation measures to substantially lessen the significant impact (CEQA Guidelines §§ 15086, subd. (d), 15204, subd. (f)). CDFW believes that if roosting habitat for special-status bat species is permanently impacted by the Project, the appropriate potentially feasible mitigation measure to substantially lessen the significant impact is the in-perpetuity conservation of roosting habitat suitable for the special-status bat species that were negatively impacted. CDFW recommends that the Mitigation Measure BIO-[B] included in the County's October 20, 2023, response is further revised to include the following addition in **bold**:

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats:

Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply:

- For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.

- For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. **Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.**

Response 4e-4

See Responses 4a-11 and 4d-3. CDFW's recommended compensatory mitigation for permanent impacts to special-status bat roosting habitat has not been incorporated into the project as part of this Final SEIR. However, Mitigation Measure 3.4-8 has been revised to acknowledge that additional mitigation may be required for the project as part of the regulatory permit process. Mitigation Measure 3.4-8 represents the minimum mitigation required to reduce impacts to special-status bat habitat under CEQA to a level that is less than significant and additional mitigation is not required as part of this SEIR. See Chapter 3, "Draft SEIR Errata," Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Comment 4e-5

CDFW appreciates the opportunity to comment on the DSEIR to assist Imperial County in identifying and mitigating Project impacts to biological resources. CDFW concludes that the draft SEIR does not adequately mitigate the Project's significant, or potentially significant, impacts to biological resources. To avoid or reduce impacts to below a level of significance, CDFW recommends that revised mitigation measures as described in this letter be added to a revised draft SEIR.

CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts. Questions regarding this letter or further coordination should be directed to Jacob Skaggs, Senior Environmental Scientist (Specialist), at jacob.skaggs@wildlife.ca.gov.

Response 4e-5

See Responses 4e-2, 4e-3, and 4e-4.

Comment 4e-6

ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

The comment is an attachment to Letter 4e and is provided in its entirety as Appendix I, "California Department of Fish and Wildlife Mitigation Monitoring and Reporting Program," to this Final SEIR.

Response 4e-6

See Response 4e-3.

4.4 ORGANIZATIONS

Letter 5a: US Gypsum; June 2, 2023

Comment 5a-1

United States Gypsum Company ("USG") respectfully submits the following comments on the above-referenced Draft Subsequent Environmental Impact Report ("DSEIR").

I. Project Description and Scope of the DSEIR

The project that is the subject of the DSEIR (the "Project") includes the following:

- The development of a new production well (Well No. 3) and associated pipeline to provide water to USG's Plaster City Quarry ("Quarry"); and
- Restoration of the Viking Ranch site, and preservation of the Old Kane Spring Road site, as described in the Habitat Mitigation and Monitoring Plan that was developed in connection with the 2019 Supplemental Environmental Impact Statement (the "2019 SEIS").

Response 5a-1

The comment is noted.

Comment 5a-2

In addition, the DSEIR states that it "evaluates" the potential environmental impacts associated with mining and reclamation activities associated with the Quarry expansion ("Quarry Activities"). It should be made clear, however, that these impacts were previously evaluated in the EIR/EIS that was certified by the Imperial County Board of Supervisors (the "Board") in 2008 for the USG Expansion/Modernization Project (the "2008 EIR") and in the 2019 SEIS, and that no significant changes have been proposed relative to the Quarry Activities as described in those documents. Consequently, with respect to the Quarry Activities, the primary focus and intent of the DSEIR is to (1) update the 2008 EIR by incorporating the information and mitigation measures that were developed as part of the 2019 SEIS, and (2) to evaluate whether there have been any changes in the circumstances surrounding the Quarry Activities, or any new information concerning the Quarry Activities, that raise any new or substantially more severe impacts on the environment as compared to the analysis contained in the 2008 EIR.

Response 5a-2

The comment is noted.

Comment 5a-3

II. Project Alternatives

The DSEIR identifies and evaluates five alternatives to the Project. With the exception of the "no project" alternative (Alternative 1), each of these alternatives (Alternatives 2 through 5) involve reductions in the "footprint" of mining activities at the Quarry. The DSEIR concludes that Alternative 5, which represents the greatest overall reduction in the footprint of mining activities, is the "environmentally superior alternative." (DSEIR, p. 6-29.)

Response 5a-3

The comment is noted.

Comment 5a-4

Discussion of Alternatives 2 through 5 (the "Quarry Alternatives") in the DSEIR was arguably unnecessary because (1) the impacts associated with proposed Quarry Activities were previously evaluated in the 2008 EIR and were determined by the

County to be mitigated to a level of insignificance,[3] and (2) the DSEIR does not identify any new or substantially more severe impacts associated with Quarry Activities due to any changed circumstances or new information.

Response 5a-4

CEQA Guidelines Section 15126.6(c) states, "the DSEIR must evaluate a range of reasonable alternatives to the project…which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project." This section further states that, "there is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason."

The Draft SEIR (see Section 6.3.2, "Significant and Unavoidable Impacts of the Proposed Project") determined that no new or more severe significant and unavoidable impacts would occur with project implementation. As shown in Draft SEIR Table ES-1, each of the project's identified impacts, including those associated with quarry activities and the other proposed project components, would be mitigated below a level of significance. In the absence of significant effects to be avoided or substantially lessened, the County considered numerous potential alternatives which would meet most of the project's stated objectives and could further lessen the project's impacts determined to be potentially significant but mitigable to a less than significant level.

Consistent with CEQA Guidelines Section 15126.6(c), the Draft SEIR provides a description of the County's process of selecting a reasonable range of alternatives to the proposed project including a discussion of those alternatives that were considered by the County but were ultimately rejected as infeasible. This process included consideration of numerous alternatives including alternative locations for the off-site mitigation sites. However, these were all deemed infeasible and were not further evaluated in the Draft SEIR. The Draft SEIR provides a "range of reasonable alternatives" consistent with CEQA Guidelines requirements.

Comment 5a-5

In any event, the Quarry Alternatives discussed in the DSEIR must be considered in context and must be evaluated in relation to the objectives of the Project, as discussed below.

A. Source and Previous Consideration of Quarry Alternatives

The Quarry Alternatives presented in the DSEIR were derived from, and are identical to, alternatives that were evaluated in the 2019 SEIS prepared by the United States Bureau of Land Management ("BLM"). At the time the 2019 SEIS was prepared, USG had been working with the United States Army Corps of Engineers ("USACE") on an application for a Section 404 Individual Permit to address impacts to waters of the United States associated

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[3] See Findings of Fact and Statement of Overriding Considerations for the United States Gypsum Companies Expansion/Modernization Project adopted by the Board in 2008.

with the Quarry expansion. The alternatives presented in the 2019 SEIS included a range of alternatives that were developed in coordination with USACE to evaluate potential modifications to Quarry operations to reduce impacts to waters of the United States as required by the Section 404(b)(l) Guidelines (40 CFR 230 et seq.).

The Section 404(b)(l) Guidelines suggest a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 CFR Part 230.10(d)).

Under the Section 404(b)(l) Guidelines (40 CFR 230 et seq.), an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge can be authorized. The Section 404(b)(l) Guidelines prohibit discharges of dredged or fill material into waters of the United States if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 CFR Part 230(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of the overall project purpose (40 CFR Part 230(a)(2)). The thrust of the Guidelines is that the proposed project achieves the overall project purpose while avoiding impacts to the aquatic environment to the maximum extent practicable.

From 2018 through 2019, USG worked collaboratively with the USACE in the preparation of an alternatives analysis in which a reasonable range of on-site and off-site alternatives were identified, and a list of criteria was developed to screen each alternative for practicability. On-site project alternatives were screened for practicability based on achieving the overall project purpose, logistics, and environmental criteria. The logistics criteria consisted of the evaluation of a balanced, multifaceted mining approach and exposure of mining personnel to human health and safety risks due to the creation of geological hazards such as catastrophic flooding. The on-site alternatives that were selected and ultimately evaluated in the 2019 SEIS (i.e., the Quarry Alternatives) considered various mining footprint reconfigurations in an attempt to minimize impacts to waters of the United States in addition to exploring additional mining methods that would minimize surface area disturbances.

The overall Project purpose, which was determined by defining the basic Project purpose in a manner that more specifically describes USG's goals for the Project, served as the basis for the USACE's Section 404(b)(1) alternatives analysis. USACE, USG, and the United States Environmental Protection Agency (EPA) coordinated extensively in the development of an overall project purpose that met the needs of USG while adhering to the guidance prescribed by the EPA.

The overall Project purpose as agreed to by all parties on June 13, 2018, is:

> *To maintain a reliable supply of gypsum ore to existing processing facilities in order to produce gypsum-related agricultural products and residential and commercial building products including, but not limited to, wallboard, cement, industrial and building plasters, stucco, soil amendments and conditioners, and gypsum byproducts, at levels consistent with current and projected demand in the southwestern United States.*

In light of this overall Project purpose, a preliminary practicability determination was developed in consultation with USACE staff. That determination, which is summarized in Exhibit 1 and incorporated herein by this reference, concluded that USG's proposed Project was the least environmentally damaging practicable alternative.

On June 22, 2020, the Navigable Waters Protection Rule went into effect thereby redefining the definition of waters of the United States to exclude "ephemeral features" as waters of the United States. Consequently, upon confirmation that waters of the United States were now absent from the Project area, USG withdrew its application for a Section 404 Individual Permit. However, in its Record of Decision issued in January 2020 ("ROD"), the BLM selected the Project over the Quarry Alternatives based on information contained in the 2019 SEIS and other factors, including "BLM's purpose and need, the highest and best use of public lands, public comments and stakeholder interests, economic and technical information, and applicable law and policy." (ROD, p. 6.)

Response 5a-5

The comment is noted.

Comment 5a-6

B. The Quarry Alternatives Would Not Achieve Any Project Objectives and Need Not Be Further Considered

The DSEIR identifies the following objectives for the Project:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;
2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;
3) Meet market demands for gypsum products;
4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;
5) Concurrently reclaim Quarry site for post-mining uses as Open Space;
6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and
7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter Cologne Act. (DSEIR, p. 2-11.)

The Quarry Alternatives are not relevant to Project objective numbers 4 through 7.

Response 5a-6

The commenter states that the project alternatives evaluated in the Draft SEIR would not achieve any of the project objectives and further states that the selected project alternatives are not relevant to Project Objectives 4 through 7. CEQA Guidelines Section 15126.6(a) states that "[a]n EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project." Each of the project alternatives evaluated in the Draft SEIR (see Draft SEIR Chapter 6, "Alternatives") would include development of Well No. 3 and the associated pipeline as well as restoration/preservation of the off-site mitigation sites identical to the proposed project. Therefore, each of the selected alternatives would achieve Objectives 4 through 7, which represents a majority of the project objectives.

The selected project alternatives would not achieve Objective 2 and would not fully achieve Objectives 1 and 3 as they would each limit full development of the gypsum deposit in order to avoid disturbance of the onsite aquatic resources. However, per CEQA Guidelines Section 15126.6(b), the alternatives discussion should focus on avoiding or lessening identified impacts "…even if these alternatives would impede to some degree the attainment of the project objectives…"

Comment 5a-7

Moreover, none of the Quarry Alternatives would achieve Project objective numbers 1, 2 or 3. Specifically, none of the Quarry Alternatives would "fully develop" quarrying gypsum reserves, "maximize" the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life, or "meet market demands" for gypsum products.

According to the Imperial County General Plan, the Fish Creek Mountains gypsum deposit associated with the Quarry constitutes the largest reserves of this mineral in California and represents a significant source of gypsum in the region and on the west coast (Sharpe and Cork 1995). More than 31.2 million tons of gypsum has been extracted from this deposit; of that, 30.1 million tons have been extracted by USG since 1945 (Resource Design Technology Inc. 2006). Since 1984, an average of one million tons of gypsum is produced by USG's Plaster City Plant (the "Plant") each year. This is the sole active gypsum quarry in the County, and the largest gypsum quarry in the United States. The Quarry accounts for 52 percent of statewide gypsum production, and the expected life of the remaining deposit exceeds 80 years under the proposed mining plan (Resource Design Technology Inc. 2006).

Gypsum demand depends principally on the strength of the construction industry, particularly in the United States, where the majority of gypsum consumed is used for building plasters, the manufacture of Portland cement, and wallboard products (USGS 2018). Gypsum can also be mined and milled to produce plastic fillers and fire retardants that require high-purity gypsum and calcium sulfate. Expanding technology has developed applications for gypsum in plastics, paper, paint, coatings, rubber, and adhesives, as well as pharmaceuticals, food, and other uses. USG's gypsum at the Quarry offers improved performance as it is exceptionally pure, and the deposit contains high brightness/whiteness rock with strong chemical stability. High-purity gypsum is especially important in applications supporting the Portland cement industry where impurities can have an adverse effect on cement hydration and overall material strength. High-purity gypsum is also required in agricultural applications where water-soluble products such as USG's Ben Franklin® Brand Aquacal™ Gypsum require extremely high-purity material to provide an ultrafine natural source of calcium and sulfur that helps promote plant growth in crops, lawns, and gardens in an environmentally safe and non-toxic manner.

Historically, USG has met industry demands by increasing gypsum rock recovery and production during times of economic growth. Population growth in the southwestern United States is anticipated to continue at a rapid rate in the first part of the 21st century. New housing must be constructed, and existing older housing stock must be rehabilitated, to meet projected needs. Over a 50-year period beginning after the Second World War, California added approximately 500,000 housing units each year. As the southwest region of the United States continues to grow, that growth requires the development of additional housing and support services in the form of new commercial, office, and industrial development. This development is anticipated to require additional building materials at an increasing rate. USG has studied these growth trends and has anticipated a need to increase production at its Quarry and associated Plant to supply the projected demand for wallboard and related products and to continue providing gypsum to the agriculture industry and cement manufacturers.

Located in western Imperial County, the Quarry and Plant are optimally situated to mine and process this important mineral and supply California and the southwestern region of the United States with its products, mainly wallboard products and cement rock. All other west coast gypsum production plants rely on less pure, waterborne rock shipments from Mexico. The Quarry is located close to major interstate and intrastate highways, which makes it suitable for consumers who choose to purchase raw gypsum directly from the Quarry. Access to the Quarry is via State Route 78 from both San Diego and Imperial counties. The site is also accessible to Southern California and Arizona via State Route 86 to Interstate 10 and Interstate 8. The Plant, located 26 miles southeast of the Quarry, is also located less than 15 miles from the United States/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Each of the Quarry Alternatives would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands, and therefore fail to meet the overall purpose of the Project. For this reason, and based on the rationale contained in Exhibit 1, the Quarry Alternatives need not be further considered in the Final Subsequent Environmental Impact Report for the Project ("FSEIR") and should be rejected by the County and responsible agencies because they fail to achieve any of the stated objectives of the Project.

Response 5a-7

See Response 5a-6. The selected project alternatives would achieve a majority of the project's stated objectives (Objectives 4 through 7). The alternatives would also be partially consistent with Objectives 1 through 3 as they would each allow for continued recovery of gypsum from the quarry. While the project would impede achievement of these alternatives to a degree, they were developed to reduce impacts to aquatic resources within the quarry and are consistent with CEQA Guidelines Section 15126.6(b).

Comment 5a-8

III. <u>There Are No "Waters of the United States" Within the Project Area</u>

The DSEIR is replete with reference to "waters of the United States" within the Project area. However, as noted above, on June 22, 2020, the Navigable Waters Protection Rule went into effect thereby redefining the definition of waters of the United States to exclude "ephemeral features" as waters of the United States. As such, "ephemeral features" were no longer regulated as waters of the United States under the Clean Water Act, meaning that a USACE permit would no longer be required to discharge fill material into "ephemeral features."[4]

USG filed a formal request with the USACE for an Approved Jurisdictional Determination on November 10, 2020. On February 8, 2021, the USACE issued an Approved Jurisdictional Determination ("AJD") confirming that waters of the United States were now absent from the Project area. A copy of the AJD is attached hereto as <u>Exhibit 2</u>.

In light of the AJD, the FSEIR should correct the many references to "waters of the United States" and related permitting requirements (e.g., Section 404 permit) in the DSEIR, as needed. Some (but not necessarily all) of these references, along with our suggested edits, are included in the Table of Errata attached hereto as <u>Exhibit 4</u>.

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[4] See also Sackett v. Environmental Protection Agency, 598 U.S._ (No. 21-454, decided May 25, 2023) (To establish jurisdiction under the Clean Water Act, it must be shown that a wetland has "a continuous surface connection with" a relatively permanent body of water connected to traditional interstate navigable waters).

Response 5a-8

This comment has been addressed throughout the Final SEIR. The reader is referred to Chapter 3, "Draft SEIR Errata," for each occurrence and associated text revision.

Comment 5a-9

IV. Mitigation Measures

The DSEIR identifies three categories of mitigation measures, including:

- Mitigation measures from the 2008 EIR;
- Mitigation measures from the 2019 SEIS, which have been incorporated into the DSEIR; and
- Newly proposed mitigation measures, which generally apply to the proposed quarry well and associated pipeline and/or the restoration/preservation of the Viking Ranch and the Old Kane Spring Road sites.

USG is fully committed to, and is bonded for, compliance with all of the measures identified in the 2008 EIR and the 2019 SEIS and has either complied with or is in the process of complying with each of these measures at this time.

USG's comments on specific mitigation measures are set forth below. Where revisions to mitigation measures have been proposed, we request that the revisions be made to the mitigation measures wherever they appear throughout the document.

Response 5a-9

The reader is referred to Responses 5a-10 through 5a-17 on the following pages.

Comment 5a-10

A. Mitigation Measures 4.1-1a and 4.1-1b

These newly proposed mitigation measures were identified in the DSEIR for the specific purpose of addressing the potential impacts on air quality (Impact 4-1-2) as a result of activities associated with the Viking Ranch restoration. (See DSEIR, pp. 4.1-23 through 4.1-25.) However, by their terms, the mitigation measures would apply "throughout project construction activities ...," which could be interpreted to mean that these measures also apply to Quarry Activities and other components of the overall Project. Consequently, these measures should be revised to

> `clarify that they are intended to apply only to the Viking Ranch restoration. Specifically, for both measures, the phrase "throughout project construction activities" should be changed to "throughout construction activities associated with Viking Ranch restoration."`

Response 5a-10

See Chapter 3, "Draft SEIR Errata," Section 3.2.19. Draft SEIR page 4.1-24, Mitigation Measure 4.1-1a, has been revised as follows:

> ***Mitigation Measure 4.1-1a**: The following standard mitigation measures for fugitive* PM_{10} *control shall be implemented throughout project construction activities <u>at the Viking Ranch Restoration Site</u>:*
>
> a. *All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover.*
> b. *All on site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*
> c. *All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering.*
> d. *The transport of Bulk Materials shall be completely covered unless six inches of freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material.*
> e. *All track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area.*
> f. *Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at point of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line.*
> g. *The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.*

See Chapter 3, "Draft SEIR Errata," Section 3.2.19. Draft SEIR page 4.1-24, Mitigation Measure 4.1-1a, has been revised as follows:

Mitigation Measure 4.1-1b: *The following standard mitigation measures for construction combustion equipment shall be implemented throughout project construction activities at the Viking Ranch Restoration Site:*

a. Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment.

b. Minimize idling time either by shuttling equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.

c. Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use.

d. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

Comment 5a-11

B. Mitigation Measure 3.5-lf

> Mitigation measure 3.5-lf, which is from the 2008 EIR, is intended to address potential impacts on State or Federally Protected Wetlands (Impact 4.2-3). This measure requires that USG contact the California Department of Fish and Wildlife ("CDFW") and the USACE to determine whether either agency holds jurisdiction over the Quarry wash.

In accordance with mitigation measure 3.5-lf, USG contacted the USACE in 2020. As noted above, the USACE responded on February 8, 2021, by issuing the AJD, which confirmed that no waters of the United States are present within the Project area. Therefore, while coordination with CDFW is still required, no additional coordination with USACE is necessary. Accordingly, mitigation measure 3.5-lf should be revised as follows:

> ***Mitigation Measure 3.5-1f:*** *Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the ~~CDFG and the US Army Corps of Engineers~~ California Department of Fish and Wildlife (CDFW) to determine whether ~~either agency~~ CDFW holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code ~~or Section 404 of the Federal Clean Water Act, respectively~~.*

Response 5a-11

See Chapter 3, "Draft SEIR Errata," Section 3.2.30. Draft SEIR page 4.2-44, first paragraph, has been revised as follows:

Mitigation Measure 3.5-1f: *Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the ~~CDFG and the US Army Corps of Engineers~~ California Department of Fish and Wildlife (CDFW) to determine whether ~~either agency~~ CDFW holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code ~~or Section 404 of the Federal Clean Water Act, respectively~~.*

Comment 5a-12

C. Mitigation Measure 3.5-ld

Mitigation measure 3.5-ld, which is from the 2008 EIR, is intended to address potential effects on Peninsular bighorn sheep. USG has already complied with this measure by consulting with the USFWS under Section 7 of the Federal Endangered Species Act and successfully obtaining a Biological Opinion from the USFWS.

For clarity, the FSEIR should acknowledge that this measure has been implemented and that "re-initiation" of Section 7 consultation is not required for any component of the Project.

Response 5a-12

See Chapter 3, “Draft SEIR Errata,” Section 3.2.17. Draft SEIR page 3-9, first paragraph, has been revised as follows:

3.5 MITIGATION MEASURES

In most cases, implementation of recommended mitigation measures would either result in complete avoidance of impacts or reduce impacts to less than significant. However, impacts that cannot be reduced to a less-than-significant level after application of feasible mitigation measures and alternatives are considered significant and unavoidable. As a condition of project approval, the applicant for the proposed project would be required to implement all the feasible mitigation measures identified in this EIR and adopted by the County.

In accordance with PRC Section 21081.6(a), the County would adopt a mitigation monitoring and reporting program (MMRP) at the time it certifies the EIR. The purpose of the MMRP is to ensure that the applicant will comply with the adopted mitigation measures when the project is implemented. The MMRP would identify each of the mitigation measures and describe the party responsible for monitoring, the time frame for implementation, and the program for monitoring compliance. The proposed project was originally approved in 2008 and has been partially implemented. As such, some of the mitigation measures contained in the 2008 EIR/EIS and identified in this Draft SEIR as existing mitigation measures, have already been fully implemented and need not be implemented again. The current status of each mitigation measure will be clearly denoted in the MMRP.

Comment 5a-13

D. Mitigation Measure 4.4-1

Mitigation measure 4.4-1 is a newly proposed mitigation measure that is intended to address the potential impacts of the proposed well, well pipeline, and Viking Ranch restoration on paleontological resources (Impact 4.4-1). The measure requires that pedestrian field surveys be conducted and to locate any surficial fossil localities and verify the underlying geologic units, and requires that a Paleontological Resources Monitoring and Mitigation Plan ("PRMMP") be prepared and implemented for any areas where "potential resources cannot be avoided by proposed construction activities."

We request that this measure be revised to make it clear that a PRMMP is required only for resources that are (1) identified in the field survey, and (2) cannot be avoided by proposed construction activities. Furthermore, since this measure will apply to areas that are not subject to BLM jurisdiction (i.e., the mitigation sites), the references to BLM are inapposite and unnecessary. More specifically, we propose the following revisions:

> ***Mitigation Measure 4.4-1:*** *Preconstruction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources are identified in a preconstruction field survey and cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a ~~BLM permitted~~ qualified paleontologist and approved by ~~the BLM and~~ Imperial County.*

Response 5a-13

See Chapter 3, "Draft SEIR Errata," Section 3.2.40. Draft SEIR page 4.4-13, Mitigation Measure 4.4-1, has been revised as follows:

> ***Mitigation Measure 4.4-1:*** *Pre-construction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources are identified in a preconstruction field survey and*

cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a ~~BLM permitted~~ qualified paleontologist and approved by ~~the BLM and~~ Imperial County.

Comment 5a-14

E. Mitigation Measure 4.6-1

Mitigation measure 4.6-1 is intended to address the potential impacts on hydrology and water quality (Impact 4.6-3). The DSEIR identifies mitigation measure 4.6-1 as a "newly proposed" mitigation measure. (See DSEIR, pp. ES-27 and 4.6-28.) However, this mitigation measure was identified in the 2019 EIS and compliance with this measure has already been achieved. Revisions to the DSEIR should be made in the FSEIR as needed to clarify the source and purpose of mitigation measure 4.6-1.

Response 5a-14

The 2019 SEIS describes the proposed construction of a berm along the westerly side of the quarry based on the recommendations of the 2004 Hydrology Study (Bonadiman & Associates, Inc.). Draft SEIR Mitigation Measure 4.6-1 requires this design to be updated to be consistent with the further recommendations of the updated 2018 Hydrology Study (Dudek) including armoring of the westerly bank with rock riprap. According to the project applicant, the proposed berm has already been constructed, consistent with both the 2004 Bonadiman study and the 2018 Dudek study and Mitigation Measure 4.6-1 need not be implemented again. Therefore, Mitigation Measure 4.6-1 is unnecessary and has been removed from the Draft SEIR.

See Chapter 3, "Draft SEIR Errata," Section 3.2.44. Draft SEIR page 4.6-27, fourth full paragraph, has been revised as follows:

To address the identified deficiencies in the existing berm design, Dudek (2018) recommended modifications including, at a minimum, a 50-foot-wide conveyance channel on the western side of the berm. To assist with the conveyance of surface flows around the berm, Dudek further recommended that the berm design include armoring of the westerly bank of the berm with rock riprap to decrease the likelihood and severity of erosion damage to the berm for flows generated by a 25-year design storm. The 25-year storm was selected because the berm is not intended to protect life, property, or civil improvements. In a larger storm event, it would be expected that the riprap armoring would fail, and the berm would suffer significant damage or failure. These recommendations ~~would be~~ have been incorporated into the final berm design ~~by a qualified Civil Engineer~~ and the berm has since been constructed as required by the 2019EIS ~~Mitigation Measure 4.6-1 below~~.

See Chapter 3, "Draft SEIR Errata," Section 3.2.44. Draft SEIR page 4.6-28 and Mitigation Measure 4.6-1 have been revised as follows:

In conclusion, the overall drainage patterns of the project site would remain unchanged with any runoff that does not evaporate or percolate into the coarse alluvium ultimately draining to the Fish Creek Alluvial Fan. Because drainage within the Easterly Drainage Area would be impounded, total volumes and peak flow rate would decrease thus no flooding or other adverse impacts would occur. With implementation of Mitigation Measure 3.3-7 as provided in the 2008 EIR/EIS~~ and Mitigation Measure 4.6-1 as provided below~~, drainage within the Westerly Drainage Area would be directed northward to the Fish Creek Alluvial Fan consistent with existing conditions and no flooding or other adverse impacts would occur.

> **Level of Significance Before Mitigation**: Potentially significant.
>
> ***Mitigation Measures****: Implement the following existing mitigation measure~~s~~ (see Section 4.6.4 for the full text of each measure):*
>
> - *2008 EIR/EIS*
>   - *Mitigation Measure 3.3-7*
>
> ~~***Mitigation Measure:*** *Implement the following new mitigation measure:*~~
>
> ~~***Mitigation Measure 4.6-1:*** *The final design for the proposed berm along the westerly edge of the Quarry shall incorporate the recommendations provided in the Hydrologic and Water Quality Study prepared by Dudek dated April 2018 and appended to this SEIR. These recommendations include a 50-foot-wide conveyance channel on the western side of the berm and armoring of the westerly bank of the berm with rock riprap.*~~
>
> **Level of Significance After Mitigation:** Less than significant.

Comment 5a-15

F. Mitigation Measure 4.3-2

> Mitigation measure 4.3-2 is a newly proposed mitigation measure that is intended to address the potential impacts associated with the inadvertent discovery of human remains. However, the citation to the applicable CEQA Guideline is incorrect. Specifically, the reference to CEQA Guidelines Section 15064.4(e)(l) should be changed to Section 15064.5(e).

Response 5a-15

See Chapter 3, "Draft SEIR Errata," Section 3.2.39. Mitigation Measure 4.3-2 on Draft SEIR page 4.3-17 has been revised as follows:

> ***Mitigation Measure 4.3-2:*** *Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project activities, the project operator shall immediately halt work within 50 feet of the find, contact the Imperial County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section ~~15064.4(e)(1)~~15064.5(e). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and*

> *designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, with the MDL regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.*

Comment 5a-16

V. OLD Kane Spring Road Site

The DSEIR, at pages 4.2-33 through 4.2-34, discusses the aquatic jurisdictional resources that are present at the Old Kane Spring Road site. This discussion, which is based on an initial jurisdictional aquatic resources delineation prepared by Dudek in 2021 (see Appendix E of Appendix D-4), concludes, among other things, that there are approximately 60.99 acres of RWQCB-jurisdictional non-wetland waters present on the site.

An updated jurisdictional aquatic resources delineation for the Old Kane Spring Road Site was prepared by Dudek in April 2022 (the "2022 JARD"). The 2022 JARD concludes, among other things, that there are approximately 88.5 acres of RWQCB-jurisdictional non- wetland water present on the site. A copy of the 2022 JARD is attached hereto as Exhibit 3.

The DSEIR's discussion of aquatic jurisdictional resources present at the Old Kane Spring Road site, including Table 4.2-4, should be updated based on the information in the 2022 JARD. In addition, Figure 2-4 on page 2-17 of the DSEIR (Old Kane Spring Road Preservation Site) should be replaced with Figure 4 from the 2022 JARD.

Response 5a-16

See Chapter 3, "Draft SEIR Errata," Section 3.2.11. Draft SEIR Figure 2-4 has been updated consistent with the 2022 Jurisdictional Aquatic Resources Delineation (Dudek). The 2022 delineation has been incorporated into the SEIR as Draft SEIR Appendix D-6 (see Chapter 3, Sections 3.2.1, 3.2.21 and 3.2.27) and is provided in this Final SEIR in Appendix C, "Draft SEIR Appendices Errata." Draft SEIR pages 4.2-33 and 4.2-34 have been revised as follows:

> ***Aquatic Jurisdictional Resources***
>
> A jurisdictional wetland delineation was conducted for the Old Kane Springs Road site to determine the presence and extent of jurisdictional aquatic features on the project site (Dudek 2021; see Appendix E of Appendix D-4). This delineation was updated by Dudek in 2022 (see Appendix D-6). During the jurisdictional delineation survey, the site was walked by Dudek biologists and evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of potential jurisdictional aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity (Dudek 2021).

Since no hydrophytic vegetation and/or associated wetlands were present on the Old Kane Springs Road~~Viking Ranch~~ site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel (Dudek 2021).

Non-wetland Waters of the State

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels within the desert dry wash woodland vegetation community. This wash was mapped from bank to bank to include all low-flow channels within its banks as one large non-wetland water. Additionally, several smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. Additionally, a few smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub outside of larger floodplains were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features on the Old Kane Springs Road ~~Viking Ranch~~ site deemed to be potentially jurisdictional by Dudek biologists are shown on Figure 2-4.

In general, nearly all the field-mapped non-wetland water and low-flow channel boundaries (mapped based on evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks) fell within the maximum flow areas generated through the hydrologic model. The northern and southernmost portions of the site, outside of the central wash, showed more inconsistent and less-pronounced fluvial and OHWM indicators in the field; hydrologic modeling was used to refine the extent of non-wetland water boundaries within the site. Figure 2-4 displays the boundaries of hydrologically modeled and field-verified non-wetland waters on the site and likely corresponds to accurate surface flow areas across the site during a significant runoff event.

Non-wetland waters on site are ephemeral, meaning they only flow during storm events. ~~These features were mapped because they had evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks.~~ These features are ~~classified as non-wetland waters and are~~ likely regulated by RWQCB and CDFW as waters of the state (Dudek 2022~~1~~).

Swales

Several potential swale features without well-defined banks are ~~may~~ present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may or may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but typically fell within the main floodplains of the mapped extent of non-wetland waters. ~~may be considered jurisdictional upon agency review; they can be added to the map using aerial signatures at a later date if needed.~~

Results of the jurisdictional delineation are summarized in Table 4.2-4, “Jurisdictional Resources within the Old Kane Springs Road Preservation Site,” and on Figure 2-4.~~5, “Plaster City Quarry Plan.”~~ There are approximately 88.5~~60.99~~ acres of ~~RWQCB jurisdictional~~ non-wetland waters present ~~both~~ inside ~~and outside of alluvial fan/wash and outside of~~ alluvial fan wash.

Table 4.2-4
Jurisdictional Resources within the Old Kane Springs Road Preservation Site

Type	Jurisdiction	Acres/Linear Feet
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQB	~~59.76~~88.5/13,950
~~Non-Wetland Waters of the State (Outside of Alluvial Fan/Wash)~~	~~CDFW and RWQB~~	~~1.23~~
Total Potential Jurisdictional Aquatic Resources **~~ACOE/RWQB Non-Wetland Waters and CDFW Streambeds~~**[1]		**88.5/13,950** **~~60.99~~**

Source: Dudek 2022~~1~~ (Appendix D-6)
Notes:
1. Totals may not sum due to rounding

Comment 5a-17

VI. Specific Comments and Errata

USG's additional comments and proposed revisions to specific provisions of the DSEIR are listed in the Table of Errata attached hereto as Exhibit 4 and are incorporated herein by this reference.

Response 5a-17

See Chapter 3, “Draft SEIR Errata.” The suggested revisions provided in Exhibit 4 of the comment letter are accepted as proposed and have been made in the SEIR.

Comment 5a-18

EXHIBIT 1 - PROJECT ALTERNATIVES - PRELIMINARY PRACTICALITY DETERMINATION

The comment is an attachment to Letter 5 and is provided in its entirety as Appendix G to this Final SEIR.

Response 5a-18

The comment is noted. The Preliminary Practicality Determination is provided as Appendix G, “Alternative Preliminary Practicality Determination,” to this Final SEIR.

Comment 5a-19

EXHIBIT 2 - APPROVED JURISDICTIONAL DETERMINATION

The comment is an attachment to Letter 5 and is provided in its entirety in Appendix C, “Draft SEIR Appendices Errata,” to this Final SEIR (Appendix D-5, “Approved Jurisdictional Determination,” of the Draft SEIR).

Response 5a-19

The comment is noted. The approved jurisdictional determination (AJD) for the project was incorporated into the SEIR as Draft SEIR Appendix D-5 (see Chapter 3, "Draft SEIR Errata," Sections 3.2.21, 3.2.33, 3.2.38, and 3.2.42) and is also provided in Appendix C to this Final SEIR. See Responses 4a-13 and 5a-8.

Comment 5a-20

EXHIBIT 3 - 2022 JURISDICTIONAL AQUATIC RESOURCES DELINEATION FOR THE OLD KANE SPRING ROAD SITE

The comment is an attachment to Letter 5 and is provided in its entirety in Appendix C, "Draft SEIR Appendices Errata," to this Final SEIR (Appendix D-6, "Old Kane Springs Road Jurisdictional Delineation," of the Draft SEIR).

Response 5a-20

The updated jurisdictional wetland delineation for the Old Kane Springs Road preservation site (Dudek 2022) was incorporated into the SEIR as Appendix D-6 (see Response 5a-16) and is provided in its entirety as Final SEIR Appendix C, "Draft SEIR Appendices Errata." See Chapter 3, "Draft SEIR Errata."

Comment 5a-21

EXHIBIT 4 – SPECIFIC COMMENTS AND ERRATA

The comment is an attachment to Letter 5 and is provided in its entirety as Appendix H, "Errata Table," to this Final SEIR.

Response 5a-21

See Response 5a-17. See also Chapter 3, "Draft SEIR Errata." The proposed revisions provided in Exhibit 4 of the comment letter are accepted and have been made in the SEIR. This includes revisions to Draft SEIR Figure 2-2b.

Letter 5b: US Gypsum; June 23, 2023

Comment 5b-1

Mitigation Measure Proposed by CDFW with Edits Proposed by USG (proposed deletions shown in strike-out and additions shown underlined)	**Explanation for Proposed Edits**
Mitigation Measure BIO-[A]: Assessment of Biological Resources ~~Prior to adoption of the CEQA document and Project~~ construction activities for Quarry Well No. 3, the associated pipeline, and Viking	The CEQA document (i.e., the SEIR) will be certified prior to approval and construction of the well and pipeline. Therefore, there is no need to require prior "adoption" of the CEQA document.

Ranch, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the ~~Project~~ construction footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all ~~those which meet the CEQA definition~~ ~~(~~“endangered, rare or threatened species” as defined in CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW ~~and the U.S. Fish and Wildlife Service~~, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive	The scope of this proposed measure should be limited to the Quarry Well, the associated pipeline, and Viking Ranch. Construction activities associated with the Quarry, which were previously evaluated under CEQA and NEPA and approved by the County and BLM, will be subject to other equivalent mitigation measures. See also proposed new Mitigation Measure Bio-[B]: Wildlife Translocation Plan below. The “species to be addressed” should be more precisely defined as indicated. Further consultation with USFWS is unnecessary. USG has already consulted the USFWS under Section 7 of the Federal Endangered Species Act and obtained a Biological Opinion from the USFWS.

taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.	

Response 5b-1

The commenter proposes several modifications to Mitigation Measure BIO-[A], which was proposed by CDFW (see Comment 4a-8) and added to the SEIR as Mitigation Measure 4.2-2c. These modifications were reviewed and approved by CDFW (see Comment 4d-1) and Imperial County and have been incorporated into the SEIR as proposed. See Chapter 3, "Draft SEIR Errata," Section 3.2.36 for the final version of Mitigation Measure 4.2-2c.

Comment 5b-2

Mitigation Measure 3.4-9: Burrowing Owl Avoidance Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with ~~all Project components (~~expansion of quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch) over the life of the Project. ~~If burrowing owls are detected during the focused surveys, the~~ The qualified biologist and Project proponent~~, in coordination with BLM,~~ shall prepare a Burrowing Owl Plan that shall be submitted to CDFW ~~and U.S. Fish and Wildlife Service (USFWS)~~ for review and approval prior to commencing ~~Project~~ the activities specified above. The plan shall	Consistent with the comment from CDFW, this measure would require that a focused burrowing owl survey be conducted prior to vegetation removal and ground breaking activities. However, instead of requiring the preparation of a Burrowing Owl Plan upon *detection* of an individual burrowing owl specimen during the preconstruction survey, as suggested by the CDFW, this measure, as revised, would require the preparation of a Burrowing Owl Plan *prior to* vegetation removal or ground-disturbing activities. The Burrowing Owl Plan would serve as a standard pre-construction operations manual for the treatment of new quarry phases and other project construction. Among other things, the Burrowing Owl Plan would establish pre-defined survey methods and

serve as a protocol of actions to address occupied habitat within future phases of quarry expansion, the proposed site for Well #3 and associated pipeline, and Viking Ranch. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the ~~number and location of occupied burrow sites,~~ acres of burrowing owl habitat that will be impacted, details of site monitoring and reporting requirements, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. ~~If impacts to occupied burrows cannot be avoided, information shall be provided regarding~~ The Burrowing Owl Plan shall identify adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW ~~and USFWS~~ review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of	translocation protocols to avoid or minimize potential impacts. Note: USG has or will obtain all necessary approvals from the USFWS and will comply with all applicable federal statutes and regulations, including NEPA. For this reason, there is no need to require coordination with BLM or approval by USFWS in this CEQA mitigation measure.

Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, the Project activities specified above shall be immediately halted until pre-defined avoidance and minimization measures contained in the Burrowing Owl Plan have been implemented. ~~The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities.~~	

Response 5b-2

The commenter proposes several modifications to the revisions to Mitigation Measure 3.4-9 that were proposed by CDFW (see Comment 4a-9). These modifications were reviewed and approved by CDFW with some exceptions (see Comments 4d-1 and 4d-2). As discussed in Response 4d-2, Imperial County has approved these modifications and they have been incorporated into the SEIR as proposed. See Chapter 3, "Draft SEIR Errata," Section 3.2.37 for the final version of Mitigation Measure 3.4-9.

Comment 5b-3

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures	
[…]	
To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g.,	The first sentence (which CDFW proposes to be stricken) should be retained. The requirement

clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with ~~all Project components (~~the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch~~)~~ and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys for any of the activities specified above, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on the nature of the planned Project activities, species-specific disturbance tolerance, location	that certain activities be conducted outside the nesting season is part of the existing mitigation measure and is already a requirement of the BLM approval. The activities to Ih this measure would apply should be specified with more precision as indicated. Additional criteria for determining the size of the buffer should be included as

of the nest, and nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines he young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance. […]	indicated.

Response 5b-3

The commenter proposes multiple modifications to the revisions to Mitigation Measure 3.4-8 that were proposed by CDFW (see Comment 4a-10). These modifications were reviewed and approved by CDFW (see Comment 4d-1) and Imperial County and have been incorporated into the SEIR as proposed. See Chapter 3, “Draft SEIR Errata,” Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Comment 5b-4

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats	
Prior to the initiation of ~~Project activities~~ quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch within suitable special-status bat roosting habitat, ~~Imperial County~~ the applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April	The activities to which this measure would apply should be specified with more precision as indicated. This measure should be limited to special-

through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.	status bats (not common bats).
If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply: ~~2. for~~ 1. For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed. 2. ~~A~~ For special-status bat hibernacula,	Identify the conditions for maternity vs. hibernacula more clearly, as indicated.

minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. […]	

Response 5b-4

The commenter proposes several modifications to Mitigation Measure BIO-[B], which was proposed by CDFW (see Comment 4a-11) and added to the SEIR as a provision of existing Mitigation Measure 3.4-8 (see Response 4a-11). These modifications were reviewed and approved by CDFW (see Comment 4d-1) and Imperial County and have been incorporated into the SEIR as proposed. See Chapter 3, "Draft SEIR Errata," Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Comment 5b-5

[…] Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of	The project area may provide suitable roosting sites (i.e., rock crevices) for special-status bat species. However, the potential loss of rock crevices on the site would not significantly affect roost site availability in the Fish Creek Mountains or the surrounding region. The Project site is adjacent to the Fish Creek Mountains Wilderness managed by the BLM, comprising more than 21,000 acres, and Anza Borrego Desert State Park, comprising more than 600,000 acres. Both are shown on Figure 1 of the Biological Resources Technical Report. Both the Fish Creek Wilderness and Anza Borrego Desert State Park permanently protect extensive areas of rugged desert mountain landscapes where rock crevices suitable for bat roosting are abundant. Roosting crevice availability does not appear to limit local special-

any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. ~~Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.~~	status bat populations.

Response 5b-5

The commenter proposes a modification to Mitigation Measure BIO-[B], which was proposed by CDFW (see Comment 4a-11) and added to the SEIR as a provision of existing Mitigation Measure 3.4-8 (see Response 4a-11). This modification would eliminate the proposed requirement to compensate at no less than 2:1 for permanent impacts to roosting habitat. CDFW reviewed and rejected this proposed modification (see Comment 4d-3). However, Imperial County has determined that, consistent with this comment, the proposed compensation is not necessary, as there is abundant suitable habitat on public lands throughout the surrounding area (see also Response 4d-3). This modification was made in the SEIR as proposed. See Chapter 3, "Draft SEIR Errata," Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Comment 5b-6

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […]	
Throughout the lifetime of the Project, the Project proponent shall ~~eliminate all nonessential lighting throughout the Project area and~~ avoid or limit the use of artificial light to the extent practicable during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all new lighting for the Project is fully shielded, cast downward, reduced in	This measure should apply only to any new lighting. Existing lighting is part of baseline conditions.

intensity to the greatest extent practicable, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). ~~Imperial County shall ensure use of~~ To the extent practicable, the Project proponent shall use LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler. […]	The phrase "greatest extent" should to be qualified based on what is "practicable." Without this qualifier, "greatest extent" could be interpreted to mean no lighting at all, which is infeasible. Mitigation measures will be imposed by the County as conditions of approval.

Response 5b-6

The commenter proposes several modifications to the revisions to Mitigation Measure 3.4-8 that were proposed by CDFW (see Comment 4a-12). These modifications were reviewed and approved by CDFW (see Comment 4d-1) and Imperial County and have been incorporated into the SEIR as proposed. See Chapter 3, "Draft SEIR Errata," Section 3.2.34 for the final version of Mitigation Measure 3.4-8.

Comment 5b-7

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement,	No changes proposed.

authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.	

Response 5b-7

The comment is noted.

4.5 INDIVIDUALS

Letter 6a: Edie Harmon; June 1, 2023

Comment 6a-1

Diana,

Thank you for taking time to speak on the phone twice today. Per our conversation, I would like to request an extension of the comment deadline from the end of June 2 to Sunday night or Monday morning June 5t, 2023. I am very discouraged because my computer keeps deleting things I am writing for an attachment to an email or text in the email itself and then shutting down the computer. I have no clues as to the cause or cure, but I would like to try to get something in writing completed. I have medical appointment in San Diego tomorrow, June 2 and would not be able to get home to send an email before 5 PM. Ongoing research in the Jacumba Wilderness along the border wall will require an approximate 9 mile, 9 hour walk to the border in Skull Valley on Saturday and a 14 hour, approximately 15 mile walk to the border in Davies Valley starting between 2 - 3 AM by moonlight on Monday morning before the day gets too hot. That would leave me Sunday to try to get something to you in writing before you start your work day Monday morning.

Response 6a-1

The comment is noted. The County extended the comment deadline as requested by the commenter. A second letter was submitted by the commenter and is provided in this document as Letter 7.

Comment 6a-2

In August 2022 I submitted hundreds of pages of text and photos to CBP in response to their proposed remediation/reclamation for just a 14 mile segment of border wall construction from Mt. Signal area west to the west side of Pinto Wash in Davies Valley in the Jacumba Wilderness. Much of what I learned and observed from the impacts of very heavy local downpours and the hurricane of 2022 seem to have confirmed many of the concerns and predictions about reclamation and remediation proposals. Failures I have seen are actually much worse than anything I could have predicted. I have not visited the locations of specific areas mentioned in the USG Well No 3 DSEIR, but I must admit that I am not optimistic about mitigation success as identified in the table in the DSEIR ES and in text throughout the document. Why? Because I have photo-documented what I see as the design and construction failures by the Army Corps of Engineers and the contractor from Montana. I believe that they grossly underestimated the power of moving water in Imperial County, whether from a local downpour or from a hurricane that was far less damaging than the Hurricanes in 1976 and 1977 in SW Imperial County. There is a spectacular example of geology in action just a little more than 2 miles from my home where a once beautiful canyon has had many canyon wall collapses since my first photos of March 2022, with material falling to the ground as I was getting ready to take a photo. From the September 2022 hurricane, there are photos of water flowing across the border to the south, with water 6-8 feet deepin [sic] Pinto Wash ion Davies Valley, The water flowing back to the north and into the US in Pinto Wash to east of wilderness was 10-15 feet deep according to Border Patrol and the vegetative debris was piles up against the border wall along the west facing slope to the same depth. The wash on the north experienced scouring of sand in the wash and I could look out of the wash at eye-level because erosion was shoulder deep. Several times local downpours created large and fairly deep temporary lakes.

Response 6a-2

The comment is noted. Observations of the design and construction of other projects in the region are not applicable to the proposed project or the adequacy of the Draft SEIR. Reclamation of the project site would occur in accordance with an approved reclamation plan which provides methods and standards for successful reclamation of the site to an end use of open space. These methods include slope stabilization, rehabilitation of onsite drainages to pre-mining conditions, implementation of erosion and sediment control measures, salvage and replacement of existing topsoil, revegetation, and ongoing monitoring and maintenance to ensure plant success. The project does not propose any changes to current mining operations or the approved reclamation plan.

Comment 6a-3

The DSEIR repeatedly references the 2018 Dudek groundwater study, but I could find no information in the 2023 DSEIR about the rainfall events of January 2021 and August and September 2022 and other 2022 dates that I cannot remember. Did those rainfall events result in wash and slope geology changes or any significant flood erosion. There were videos of the floodwater flowing from the Jacumba Mountains and into Salton Sea. I found no discussion of specific flood and erosion events from 2021 and 2022 and even early 2023.

Response 6a-3

As described in Draft SEIR Section 4.6, "Hydrology and Water Quality," the hydrology of the project region is "dominated by brief but high intensity rainfall events" that may "result in channel forming flash floods with high scouring energy" with runoff often redirecting flood flows, creating new channels, and developing "a system of braided channels within the alluvial basin." Rainfall events such as those that occurred in 2021 and 2022 are consistent with regional climate patterns and do not represent a significant change in existing conditions that might necessitate an update of the 2018 groundwater study (Dudek; Draft SEIR Appendix G-1).

Comment 6a-4

DSEIR p. 4.6-3 states that the average annual rainfall is 4-5 inches. Average is meaningless because rainfall is highly variable near the mountains. The rainfall in Ocotillo is very different from rainfall where I live several miles to the SE, but closer to the mountains and therefore more subject to the mountain rainfall shadow effect. Where was rainfall data monitored in relation to any of the specific sites mentioned in the DSEIR.

Response 6a-4

Draft SEIR page 4.6-1, Section 4.6.1.1, "Regional Setting," states that average annual rainfall in the nearby City of El Centro is three inches. Page 4.6-3, second paragraph states that the average annual rainfall in the 322,686-acre Ocotillo Lower Felipe hydrologic area, which encompasses the project site, is approximately 4.5 inches. Site-specific rainfall monitoring was not conducted for the proposed project. The annual average rainfall data for the project area is provided as one part of a larger description of the region's overall climate which acknowledges the varied topography, hydrology, and weather patterns in the region.

Comment 6a-5

FIG 4.6-2 indicates that the site was flown over 5-5-2022, or several months before the heaviest rain events in SW Imperial County, including the hurricane of 9/2022. This suggests to me that the Floodplain map is very likely to be outdated and that there may have been some serious changes to drainages and places of heaviest or deepest stream flow. That is certainly what I saw near the international border during the past year's rain events..

Response 6a-5

The reader refers to Draft SEIR Figure 4.6-2, "Existing Floodplain." This figure was generated based on Federal Emergency Management Agency (FEMA) flood zone data. Flood zone data is maintained by FEMA and is updated periodically but not annually or in response to individual storm events. Draft SEIR Figure 4.6-2 reflects the available data and existing conditions on and near the project site at the time the Notice of Preparation (NOP) of the Draft SEIR was published in accordance with CEQA requirements (CEQA Guidelines Section 15125).

Comment 6a-6

Because the well is not in the same basin as the residential communities of the Ocotillo Nomirage Community Area, I do not see well interference or adverse impacts from the Well No 3 UNLESS this is followed by a request to increase groundwater export from the existing USG wells near the community of Ocotillo. Does increased quarry output mean increased factory output that would lead to a request to increase export of potable groundwater from wells in the Ocotillo area?

Response 6a-6

The quarry output and the plant production relative to the Ocotillo well field were analyzed in the 2008 EIR/EIS and subsequent 2019 SEIS. This project proposes no change to the production volumes or water consumption estimates previously analyzed and approved.

Letter 6b: Edie Harmon; June 4, 2023

Comment 6b-1

My apologies. This is being prepared following the disappearance of several earlier efforts to submit comments. For mysterious reasons my computer is having problems with the Word Perfect 2021 program I have been using for years, and even stranger computer shut-downs while I was working on my comments.

Thank you for being willing to accept these late submitted comments. I have not visited the various sites of project components because a have a low clearance Honda Fit and assume that access to the area would require a different vehicle. Thus, these comments and questions will be general in nature and not USG project well or restorationsites [sic] specific.

Response 6b-1

The comment is noted.

Comment 6b-2

1. These comments will be limited because I will assume that comments on biological resources including the endangered

Peninsular Bighorn Sheep (PBS) will be addressed by PBS experts at CDFW, USFWS, and BLM. Thus I do not plan to submit additional comments on PBS,

Response 6b-2

The comment is noted.

Comment 6b-3

2. These comments are related to hydrology, flooding, and changes in geological or surface features in response to issues of heavy local downpours and the most recent hurricane of September 2023. I was living in Imperial County during the hurricane of September 1976 and in Ocotillo during the August 1977 hurricane and several serious flood events in the Ocotillo, Nomirage and Yuha area in SW Imperial County. I recall that the flood waters coming from the Jacumba Mountains destroyed the 2 westbound lanes of I-8, the railroad tracks and bridge to the west o0f [sic] Ocotillo and much of the central party of Ocotillo. Even through [sic] there were periods of standing water there was no measurable increase in static water levels in wells monitored by USGS in response to any hurricane or local downpour and flash flooding events. There have been many times when Hwy 98 was closed to all but local traffic because standing water was so deep and the road was filled with sand and rocks that were carried to the E and NE from the Jacumba Mountains where rains were heavier cknowledge [sic] history of severe rain events and resulting flooding

Response 6b-3

The comment is noted.

Comment 6b-4

3. In August 2022 I submitted hundreds of pages of text and photos to CBP in response to their proposed remediation/reclamation for just a 14 mile El Centro 1 segment of border wall construction from Mt. Signal area going west to the west side of Pinto Wash in Davies Valley in the Jacumba Wilderness. Much of what I learned and observed from the impacts of very heavy local downpours and the hurricane of 2022 seem to have confirmed many of the concerns and predictions about reclamation and remediation proposals. Failures related to unexpected rainfall and its consequences that I have seen and photographed are actually

much worse than anything I could have predicted. The DSEIR dated April 2023, approximately 8 months AFTER the local downpour of Aug. 8, 2022 that caused serious erosion damage along the CBP border wall in Skull Valley and left a stranding [sic] lake, one of many that I visited in 2022.

Photo of local downpour on 8/8/22 was taken from my property. There was no rain where I live. Four days later, there was standing water that appeared to have been as much as 4 - 6 feet deep near the large dune on the west side of Skull Valley in the JacumbaWilderness [sic] that had received water from the downpour seen above right.

4. I have not visited the locations of specific areas mentioned in the USG Well No 3 DSEIR, but I must admit that I am not optimistic about mitigation success as identified in the table in the DSEIR ES and in text throughout the document. Why? Because I have photo-documented what I see as the design and construction failures by the Army Corps of Engineers (ACOE) and the contractor from Montana. I believe that they grossly underestimated the power of moving water in Imperial County, whether from a local downpour or from a hurricane that was far less damaging than the Hurricanes in 1976 and 1977 in SW Imperial County. Revegetation and/or reseeding become increasingly problematic once there has been significant disturbance or removal of topsoil and upper layers of soil near Mt. Signal.

Response 6b-4

See Response 6-2. The commenters observations of drainage patterns and historical rain events in the project area are noted for the decisionmakers. The reader is referred to Draft SEIR Section 4.6.1.1, “Regional Setting,” which in part describes the climate and rainfall patterns of the Colorado Desert. This section acknowledges that the project area experiences a wide range of rainfall levels based on season and topography and that in the months of August and September the project area often experiences severe thunderstorms with monsoon conditions potentially resulting in "severe flash flooding, washing out roads, scouring washes and uprooting vegetation."

Reclamation of the project site would occur in accordance with an approved Reclamation Plan, which provides methods and standards for successful reclamation of the site to an end use of open space. These methods include slope stabilization, rehabilitation of onsite drainages to pre-mining conditions, implementation of erosion and sediment control measures, salvaging and replacing existing topsoil, revegetation, and ongoing monitoring and maintenance to ensure plant success. The project does not propose any changes to current mining operations or the approved reclamation plan.

Comment 6b-5

5. DSEIR Fig. 2-3 and Fig. 2-6 Viking Ranch Restoration site use an outdates [sic] aerial image from 2018 and probably should be updated following the hurricane of September 2022 is flood waters passed through this property and based on video images made of flood waters flowing from mountains toward Salton Sea. If this property was unimpacted by flood waters since the 2018 image, this information should be clarified. Figures in the Dudek 2018 appendix for these sites suggest that there may well be changes to sizes and locations of some stream channels. It was nice to be able to enlarge figures in the Appendices, even if they are outdated.

Response 6b-5

Draft SEIR Figures 2-3 and 2-6 show the general drainage patterns on the Viking Ranch Restoration Site for informational purposes. Recent minor changes to the location or size of stream channels due to storm events would have no meaningful effect on the proposed restoration plan for the site. Regardless of the location or size of onsite stream channels, the project would restore those stream channels to achieve a more natural drainage pattern that connects to surrounding off-site drainages.

Comment 6b-6

6. Have there been flood or drainage changes that affect the quarry and potentially details of the 2008 Reclamation Plan approval? If so, should the 2003 Reclamation plan recorded as 2008-018432 be modified or updated? The approved 2003 reclamation plan is now 20 years old. (See DSEIR p. 2-20.) DSEIR p. 2-23 states theat [sic] there have been, no changes to the 2003 Reclamation Plan.

Response 6b-6

Once approved, a reclamation plan need not be updated if no substantial changes are proposed (i.e., changes which would substantially affect completion of reclamation or change the proposed end use). The project does not propose any changes to current mining operations or the approved reclamation plan. As a substantial deviation from the approved reclamation plan is not proposed as part of the project, no updates to the reclamation plan are necessary.

Comment 6b-7

7. The "Confidential Cultural Resources Report for the Us Gypsum Company Expansion/modernization Project Supplemental EIS Imperial County, California" Prepared by Pacific Legacy, Inc., 900 Modoc Street, Berkeley, California 94707, Project No. 3215-01, June 2018 had each page identified as "confidential", so I chose not to read it. This report probably should not have been included in the documents distributed for public review.

Response 6b-7

Draft SEIR Appendix E, "Cultural Resources Report," was redacted prior to publication to exclude all confidential information such as the location of cultural resources identified in the report. The reader should not be discouraged from viewing this or any other portion of the Draft SEIR.

Comment 6b-8

8. DSEIR p. 2-24. What are the plans if well #3 fails to meet the projected production output anticipated? There can be no guarantees about the water quality or productivity in terms of gpm or gpd from any well that has not yet been drilled. That is why well drillers with whom I have spoken require payment for drilling and completing construction of a new well prior to finishing the work. They get paid whether or not the well can produce any given quantity of water or even water at all. To drill and complete a well of 6 inches in diameter and 565 feet deep will not be inexpensive. P. 2-25 fails to give the diameter of the water pipeline.

Response 6b-8

If proposed Well No. 3 fails to meet projected production levels the quarry would continue to rely on its existing supply source. Water is currently hauled by rail to the quarry from the plant. The proposed well diameter is 10 inches as stated on page 2-24 of Draft SEIR Chapter 2, "Project Description."

Comment 6b-9

9. Site restoration of the two sites sounds interesting even if I am skeptical. I would be interested in a site visit prior to and during of following completion of the restoration work. Have professionals for the work been selected yet?

Response 6b-9

The comment is noted. The County has arranged for the commenter to visit the quarry on November 10, 2023, to tour the revegetation areas as requested.

Comment 6b-10

10. Has there been evidence of revegetation success at the quarry site, or is there just reliance on the old 2003 reclamation Plan? I am aware of many revegetation failures on BLM lands in SW Imperial County7 [sic], and special failure of revegetation where sand and gravel operations have been completed. Can there be any revegetation success without supplemental water being added at this quarry site? Might it be possible for tours of the revegetation sites before, during or after for interested members of the public?

Response 6b-10

The project's approved 2003 reclamation plan has extensive revegetation requirements and guidelines (see reclamation plan Attachment D, "Revegetation Plot Plan"). A review of annual inspection reports for the quarry between 2021 and 2023 indicates that revegetation testing and reclamation is being implemented concurrent with mining and in accordance with the approved reclamation plan. The County has arranged for the commenter to visit the quarry on November 10, 2023, to tour the revegetation areas as requested.

Comment 6b-11

Section 4.6 Hydrology and water quality and Appendix G, G-1 and G-2

11. Dudek 2018 Hydrology and Water Quality Study is now five years old.

Response 6b-11

The reader is referred to Response 6-3.

Comment 6b-12

12. DSEIR p. 4.6-1 states that most of rain that falls in December through March, However, my experience is that the heaviest rainfalls, local downpours and hurricanes seem to come in August-September and can cause serious flash floods with extremely significant flash flood caused erosion of slopes and washes. It is the rains in the mountains in SW Imperial County that may be more relevant to the USG projects than the rainfall in El Centro to the east. Rainfall is very local in SW Imperial County except during hurricanes. What has been the annual rainfall at

various locations for the different components of this USG project since the USG project was first proposed?

Response 6b-12

The commenters observations about rainfall patterns in the project region are noted. Onsite precipitation monitoring was not conducted in support of the proposed project. Annual rainfall estimates provided in the Draft SEIR were derived from available government data. Although most rainfall occurs in the months of December through March, page 4.6-1 of the DSEIR acknowledges that the months of "August and September can experience severe thunderstorms associated with monsoon conditions…" This section of the Draft SEIR also acknowledges that rainfall levels can vary significantly by elevation and topography stating that, "[a]t the Anza Borrego State Park headquarters, located in a canyon along the east side of the Peninsular Range, rainfall can average as high as six to seven inches per year." The hydrology analyses used to support preparation of the Draft SEIR are based on the best available data on the climate and hydrologic patterns of the project region.

Comment 6b-13

13. DSEIR p. 4.6-3 states that the average annual rainfall is 4-5 inches. "Average" is meaningless because rainfall is highly variable near the mountains. The rainfall in Ocotillo is very different from rainfall where I live several miles to the SE of Ocotillo, but closer to the mountains. Therefore this area is more subject to the mountain rainfall shadow effect. Where was rainfall data monitored in relation to any of the specific sites mentioned in the DSEIR? Here there have been numerous flash flood events bringing moving water from the mountains and leaving standing water in low areas flooding the state Hwy 98 at numerous locations.

Response 6b-13

The reader is referred to Responses 6a-4 and 6b-12.

Comment 6b-14

14. DSEIR 4.6-3 describes how flash flooding can cause changes to braided channels or changing aspects of existing stream channels. Has this happened during nor [sic] as a result of the Hurricane of 2022? If so, should maps be revised to reflect these changes? Where and what is the current condition of channels through which the flood waters of the 2022 hurricane as they flowed toward the Salton Sea? A map would be educational if nothing else. Did flood waters from the hurricane adversely impact desert pupfish habitat? If so how?

Response 6b-14

The reader is referred to Responses 6a-3 and 6a-5 regarding heavy rainfall that occurred in 2022 and suggested updates to related hydrology figures.

As described in Draft SEIR Section 4.6.1, "Environmental Setting," flashfloods and resulting flood flows are a natural part of the climate and hydrologic patterns of the project region. Any potential effects to desert pupfish from flood conditions in 2022 are not associated with the proposed project and need not be addressed in the Draft SEIR. The reader is referred to Draft SEIR Section 4.6, "Hydrology and Water Quality," (see Impact 4.2-2) for a discussion of potential effects on desert pupfish habitat.

Comment 6b-15

15. Is the soil in the area of the project more porous than the soils of the Ocotillo-Coyote Wells Groundwater Basin? I recall Dr. John Izbicki of USGS Water Resources in San Diego reminding me that it would take a long period of standing water to be able to percolate down through 100 feet of dry soil to reach the water table if there is to be any significant recharge. His way of explaining to me why even with flooding and standing water there has been no measurable recharge from the hurricanes of 1976 and 1977 and subsequent heavy rainfall events in the Ocotillo area and its surrounding mountains. Or another way of saying that use and outflow including evapotranspiration exceed any recharge. He said this basin has fossil groundwater with the last significant recharge at the end of the last Ice Age. With declining water levels, when the water is gone, the water is gone.

Response 6b-15

The commenter's discussion of groundwater recharge in the Ocotillo-Coyote Wells Groundwater Basin is noted. The porosity of project site soils was not measured as part of the groundwater analysis. According to the 2018 Hydrology Study (Dudek; p. 8), in relation to the project site, groundwater recharge is greatest at the apex of the Fish Creek Alluvial Fan where surface flow from the quarry enters the Fish Creek Wash (Houston 2002, cited in Dudek 2018).

Comment 6b-16

16. DSEIR FIG 4.6-2 indicates that the site was flown over 5-5-2022, or several months before the heaviest rain events in SW Imperial County, including the hurricane of 9/2022. This suggests to me that the Floodplain map is very likely to be outdated and that there may have been some serious changes to drainages and places of heaviest or deepest stream flow. That is certainly what I saw near the international border during the past year's rain events. See photos on last page.

Response 6b-16

The reader is referred to Responses 7-5 and 7-14.

Comment 6b-17

17. "According to Dudek (2021), historical aerial imagery and topographic maps show that Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the proposed Quarry expansion. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding ..." (DSEIR 4.6-9) This suggests that the map of channels should be updated following the flows from Hurricane of Sept. 2022.

Response 6b-17

The reader is referred to Responses 7-5 and 7-14.

Comment 6b-18

18. All groundwater studies cited in the DSEIR appear to be outdated, with the most recent being 2018. Since that time there have been several significant flood events which should have triggered at least a modest update of the Dudek and Bonadiman 2018 hydrology studies and/or mention of such events in the 4/2023 USG DSEIR. See DSEIR p. 4.6-19. There was no explanation for why the hydrology studies were not updated for the April 2023 DSEIR and/or whether changes would in any way change some of the restoration proposals or information relevant to the desert pupfish habitat and survival.

Response 6b-18

The reader is referred to Response 6a-3 regarding the age and adequacy of the 2018 Hydrology Study (Dudek; Draft SEIR Appendix G-1) and Response 6b-14 for a discussion of desert pupfish habitat.

Comment 6b-19

19. DSEIR p. 4.6-22 states as follows: "**New Information** A Jurisdictional Delineation (Hernandez Environmental Services 2016), Hydrologic and Water Quality Study (Hydrology Study) (Dudek 2018), and Update on Groundwater Conditions Memorandum (Todd Groundwater 2018) were completed as part of the 2019 SEIS." Let me remind you that the DSEIR was dated April 2023. This is at least 7 months after the September hurricane where videos showed

flood waters raging down and entering lands and drainages just west of Salton Sea. This is June 2023 so SEIS of 2019 is about four years out of date related to flash flooding and the impacts of the 2022 hurricane event. This information should be updated once again. Why was it not updated? Perhaps I missed an update in 2023 related to the 2022 hurricane, but I could not find it in documents for the DSEIR of April 2023.

Response 6b-19

The Draft SEIR acknowledges that the project area at times experiences severe rainfall events and resulting washouts and erosion such as that which occurred in 2022. These natural events are considered part of the overall climate of the region when modeling and analyzing the hydrology of the project area. Furthermore, the proposed project would be implemented over an 80-year period during which time the local surface conditions and drainage patterns of the project area are anticipated to continue to change in response to environmental conditions. These individual storm events do not affect the analysis, conclusions, or recommendations contained in the project's hydrology studies.

The reader is referred to Response 6b-14 for a discussion of project impacts on desert pupfish habitat.

Comment 6b-20

20. Because well #3 is not in the same basin as the residential communities of the Ocotillo Nomirage [sic] Community Area, I do not see well interference or adverse impacts from the Well No 3 UNLESS approval of the CUP for well No 3 is followed by a request to increase groundwater export from the existing USG wells near the community of Ocotillo to support increased factory operations at Plaster City. Does increased quarry output mean increased factory output that would lead to a request to increase export of potable groundwater from wells in the Ocotillo area?

Response 6b-20

The reader is referred to Response 6a-2.

Comment 6b-21

21. There is a spectacular example of geology in action just a little more than 2 miles from my home where a once beautiful canyon has had many canyon wall collapses since my first photos of March 2022, with material falling to the ground as I was getting ready to take a photo. From the September 9, 2022 hurricane, there are photos of water flowing across the border to the south, with water 6-8 feet deepin [sic] Pinto Wash in Davies Valley, The water

flowing back to the north and into the US in Pinto Wash to east of wilderness was 10-15 feet deep according to Border Patrol and the vegetative debris was piles up against the border wall along the west facing slope to the same depth Pinto wash flowing north on the north side of the border experienced scouring of sand in the wash and I could look out of the wash at eye-level because erosion was shoulder deep. Scouring of Pinto Wash north of border barrier and concrete paved road showing the impact of the 2022 hurricane. In places, the flowing water undercut the concrete road creating a drop of almost 3 feet. Photos below are from June 3, 2023. Dark material is foreground is where grading equipment and dozers tried to grind the plant debris into sand north of the concrete road. Just to show the power of moving water.

Response 6b-21

The comment is noted for the decisionmakers. See Responses 6a-2 and 6b-4.

Comment 6b-22

22. Several times local downpours created large and fairly deep temporary lakes. The USG 2023 DSEIR repeatedly references the 2018 Dudek groundwater study, but I could find no information in the 2023 USG DSEIR about the

> rainfall events of January 2021 and August and September 2022 and other 2022 dates that I cannot remember. Did those rainfall events result in wash and slope geology changes or any significant flood erosion in the vicinity of the USG project components areas? There were videos of the floodwater flowing from the Jacumba Mountains and into Salton Sea. I found no discussion of specific flood and erosion events from 2021 and 2022 and even early 20223 [sic] in the April 2023 DSEIR.

Response 6b-22

The reader is referred to Response 6a-3.

CHAPTER 5:
LIST OF PREPARERS

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CHAPTER 5:
LIST OF PREPARERS

5.1 LEAD AGENCY STAFF

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- Michael Abraham, Assistant Planning and Development Services Director
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5.2 CONSULTANTS AND OTHER INDIVIDUALS INVOLVED IN THE PREPARATION OF THE EIR

5.2.1 EIR Consultant

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- Bruce Steubing, Principal and Project Director
- Andrew Heinemann, State Licensed Geologist
- Monika Krupa, Senior Planner
- Kristin Faoro, Senior Planner
- Mark Hernandez, Graphics Production
- Katharina McKillip, Document Production Manager

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CHAPTER 6:
REFERENCE AND RESOURCES

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CHAPTER 6:
REFERENCES AND RESOURCES

References quoted from the Draft SEIR can be found in Chapter 9, "References and Resources," of the Draft SEIR. The following references and resources pertain to the Final SEIR only.

Chapter 1, "Introduction"

No references.

Chapter 2, "CEQA Review"

No references.

Chapter 3, "Draft EIR Errata"

No references.

Chapter 4, "Response to Comments"

County of Imperial. 2021. *Notice of Completion of Inspection and Surface Mining Inspection Report* for the Plaster City Quarry, CA Mine ID Number 91-13-0005.

____. 2022. *Notice of Completion of Inspection and Surface Mining Inspection Report* for the Plaster City Quarry, CA Mine ID Number 91-13-0005.

____. 2023. *Notice of Completion of Inspection and Surface Mining Inspection Report* for the Plaster City Quarry, CA Mine ID Number 91-13-0005.

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CHAPTER 7:
ACRONYMS AND GLOSSARY

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CHAPTER 7:
ACRONYMS AND GLOSSARY

ACHP	Advisory Council on Historic Preservation
ACOE	Army Corps of Engineers
AB	assembly bill
AF/yr	acre-feet per year
AF	acre-feet
APE	area of potential effect
APN	Assessor Parcel Number
ARB	air resources board
ATCM	Airborne Toxic Control Measure
BACT	best available control technology
BAU	business as usual
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	best management practices
BO	biological opinion
CAAQS	California ambient air quality standards
CAFÉ	Corporate Average Fuel Economy
CalEEMod	California Emissions Estimator Model
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act of 1988
CCAR	California Climate Action Registry
CCR	California Code of Regulations
CDFG	California Department of Fish and Game (former)
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQ	White House Council on Environmental Quality

CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2E	carbon dioxide equivalent
County	Imperial County
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CRR	cultural resources report
CUP	conditional use permit
CWA	Clean Water Act
DEIR	draft environmental impact report
DO	dissolved oxygen
DOC	California Department of Conservation
DPW	Imperial County Department of Public Works
DWR	California Department of Water Resources
EDR	Environmental Data Resources
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act of 2007
EMFAC	Emission Factor Model
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act
ESA	environmental site assessment

°F	Fahrenheit
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FIRM	flood insurance rate map
FMP	flood management plan
ft/s	feet per second
FTHL	flat-tailed horned lizard
GHG	greenhouse gases
GIS	geographic information system
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
gpd	gallons per day
gpm	gallons per minute
GVWR	Gross Vehicle Weight Rating
GWP	global warming potential
H_2O	water vapor
HA	hydrologic area
HCP	Habitat Conservation Plan
HDPE	high-density polyethylene pipe
HEC-RAS	Hydrologic Engineering Centers River Analysis System
HFCs	Hydrofluorocarbons
HMMP	Habitat Mitigation and Monitoring Plan
hp	horsepower
HRA	health risk assessment
HA	hydrologic unit
ICAPCD	Imperial County Air Pollution Control District
in/sec	inches per second
IPaC	Information for Planning and Conservation
IS/MND	Initial Study/Mitigated Negative Declaration
IPCC	Intergovernmental Panel on Climate Change

Lb/day	Pounds per day
LCFS	Low Carbon Fuel Standard
LDAMDV	light duty auto – medium duty vehicle
Ldn	day-night noise level (also DNL)
Leq	equivalent noise level
LEV	low-emission vehicle
LUP	linear utility project
MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Levels
mg/L	milligrams per liter
mg/m^3	milligrams per cubic meter
mL/hr	milliliters per hour
MMRP	mitigation monitoring and reporting plan
MMT	million metric tons
$MMTCO_2E$	million metric tons of CO_{2E}
mph	miles per hour
MRZs	Mineral Resource Zones
msl	mean sea level
MT	million tons
MTC	Metropolitan Transportation Commission
MW	megawatts
N	Nitrate
NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAS	National Academy of Sciences
NCDC	National Climatic Data Center
ND	negative declaration
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NF_3	nitrogen trifluoride
NHTSA	Department of Transportation’s National Highway Traffic Safety Administration

NOI	Notice of Intent
NRHP	National Register of Historic Places
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	oxides of nitrogen
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NOC	notice of completion
NO	nitric oxide
NOP	notice of preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OES	Imperial County Office of Emergency Services
OHWM	ordinary high water mark
ONRW	Outstanding National Resource Waters
OPR	Governor’s Office of Planning and Research
OSHA	U.S. Department of Labor Occupational Safety and Health Administration
PBS	Peninsular bighorn sheep
PFCs	perfluorocarbons
PFYC	Potential Fossil Yield Classification
PG&E	Pacific Gas and Electric Company
PM_{10}	respirable particulate matter
$PM_{2.5}$	particulate matter
ppm	parts per million
PRC	Public Resources Code
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PSD	prevention of significant deterioration
PV	photovoltaic

QSP	qualified SWPPP practitioner
RAQS	Regional Air Quality Strategy
ROG	reactive organic gases
ROW	right of way
RPO	Resource Protection Ordinance
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SCAG	Southern California Association of Governments
SCS	sustainable communities strategy
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SEIR	subsequent environmental impact report
SEIS	Subsequent environmental impact statement
SF_6	hexafluoride
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMO	surface mining ordinance
SMP	surface mining permit
SO_2	sulfur dioxide
SO_x	sulfur oxides
SR	State Route
SSAB	Salton Sea Air Basin
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCR	tribal cultural resources
TDS	total dissolved solids
TMDL	total maximum daily load
tpy	tons per year

VOC	volatile organic compounds
UBC	Uniform Building Code of 1997
USBR	U.S. Bureau of Reclamation
USDA	United States Department of Agriculture
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USG	United States Gypsum
USGS	U.S. Geological Survey
VDECS	Verified Diesel Emission Control Strategies
WEAP	worker education awareness program
WDR	Waste Discharge Requirement
WMMA	West Mesa Management Area
WSA	Water Supply Assessment
yr	year

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APPENDICES

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APPENDIX A:
COMMENTS ON THE DRAFT SEIR

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COUNTY EXECUTIVE OFFICE

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April 19, 2023

TO: Diana Robinson, Planning and Development Services Department

FROM: Rosa Lopez-Solis, Executive Office

SUBJECT: Comments – USG Plaster City Quarry Expansion and Well No. 3 Project – CUP 20-0016

The County of Imperial Executive Office is commenting on USG Plaster City Quarry Expansion and Well No. 3 Project – CUP 20-0016 project. The Executive Office would like to inform the developer and the Imperial County Planning Department of conditions and responsibilities should the applicant seek a Conditional Use Permit (CUP). The conditions shall be placed on CUP 20-0016 and commence prior to the approval of an initial grading permit and subsequently continue throughout the permitting process. This includes, but not limited to: 1-1

- Sales Tax Condition. The permittee is required to have a Construction Site Permit reflecting the project site address, allowing all eligible sales tax payments are allocated to the **County of Imperial, Jurisdictional Code 13998**. The permittee will provide the County of Imperial a copy of the CDTFA account number and sub-permit for its contractor and subcontractors (if any) related to the jobsite. Permittee shall provide in written verification to the County Executive Office that the necessary sales and use tax permits have been obtained, prior to the issuance of any grading permits.
- Construction/Material Budget: Prior to a grading permit, the permittee will provide the County Executive Office a construction materials budget: an official construction materials budget or detailed budget outlining the construction and materials cost for the processing facility on permittee letterhead.

Should there be any concerns and/or questions, do not hesitate to contact me.

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May 22, 2023

Ms. Diana Robinson
Planning Division Manager
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: NOA of a Draft SEIR for the USG Plaster City Quarry Expansion and Well No. 3 Project; CUP 20-0016

Dear Ms. Robinson:

On April 11, 2023, the Imperial Irrigation District received from the Imperial County Planning & Development Services Department, the Notice of Availability of Draft Subsequent EIR for the USG Plaster City Quarry Expansion and Well No. 3 project; Conditional Use Permit No. 20-0016. The project consists of approval of a CUP from the County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. The Draft SEIR evaluates potential environmental impacts associated with mining and reclamation activities under the Quarry expansion, for full disclosure and to provide the appropriate CEQA review for use by responsible agencies. The USG Plaster City Quarry consist of 2,048 acres located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry on a USG-owned parcel (APN 033-020-009). The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30-foot-wide by 3.5 miles long) of land, most of which (7.25 acres) is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. The proposed pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. 2-1

IID has reviewed the Draft SEIR and found that the comments provided in the August 22, 2022 district letter (see attached letter) continue to apply. 2-2

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Enrique B. Martinez – General Manager
Mike Pacheco – Manager, Water Dept.
Jamie Asbury – Manager, Energy Dept.
Matthew H Smelser – Deputy Mgr. Energy Dept.
Geoffrey Holbrook –General Counsel
Michael P. Kemp – Superintendent, Regulatory & Environmental Compliance
Laura Cervantes. – Supervisor, Real Estate
Jessica Humes – Environmental Project Mgr. Sr., Water Dept.

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August 22, 2022

Mr. Jim Minnick
Director
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: NOP of a Draft SEIR For USG Plaster City Quarry Expansion and Well No. 3 Project; CUP20-0016

Dear Mr. Minnick:

On July 15, 2022, the Imperial Irrigation District received from the Notice of Preparation of a Draft Supplement Environmental Impact Report for the USG Plaster City Quarry expansion and well no. 3 project. The USG Plaster City Quarry consists of 2,048 acres located in the northwestern portion of Imperial County adjacent to the Imperial County/San Diego County line. Well No. 3 would be located east of the existing Quarry. The proposed pipeline would be approximately 3.5 miles in length and would be developed within an existing right-of-way over an additional 12.7 acres (30-foot-wide by 3.5 miles) of land, most of which (7.25 acres) is managed by the BLM. A portion of the ROW (3.75 acres) is located within the Anza-Borrego Desert State Park.

The IID has reviewed the application and has the following comments:

1. To obtain electrical service for the proposed well pump #3, the applicant should be advised to contact Gabriel Ramirez, IID Service Planner, at (760) 339-9257 or e-mail Mr. Ramirez at gramirez@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the applicant will be required to submit pump specifications: horse power, operating voltage, pump starter information; AutoCAD site plan, drawings, proposed power line rights of way and access road to operate and maintain proposed underground power line that will serve the well pump, and 2-3 the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing new electrical service to the project.

2. Electrical capacity is limited in the project area. A circuit study may be required. Any system improvements or mitigation identified in the circuit study to enable the provision of electrical service to the project shall be the financial responsibility of the applicant.

3. The proposed project is subject to IID's Interim Water Supply Policy. In order to obtain a water supply from IID for a non-agricultural project, the project proponent will be required 2-4 to comply with all applicable IID policies and regulations and is required to enter into a

water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the Project, including potential impacts to the Salton Sea as a result of reduced drainage flow, be adequately assessed, appropriate mitigation developed if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies.

4. IID has implemented a water supply apportionment program pursuant to IID's revised Equitable Distribution Plan, which the Project is subject to including any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the Project's water as an industrial water user. For more information on how to obtain a water supply agreement, please visit IID's website at https://www.iid.com/water/municipal-industrial-and-commercial-customers or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com. 2-4 Cont.

5. Although the proposed well #3 is not an issue because it is outside of the Lower Colorado River Accounting Surface area, nonetheless, the project is subject to an IID Encroachment Permit for a pump the applicant plans to place on the Westside Main Canal.

6. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way. 2-5

7. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities

8. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent. 2-6

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Enrique B. Martinez – General Manager
Mike Pacheco – Manager, Water Dept.
Jamie Asbury – Manager, Energy Dept.
Constance Bergmark – Deputy Mgr. Energy Dept., Energy Business, Regulatory & Transactions Admin.
Geoffrey Holbrook – Interim General Counsel
Michael P. Kemp – Superintendent, Regulatory & Environmental Compliance
Laura Cervantes. – Supervisor, Real Estate
Jessica Humes – Environmental Project Mgr. Sr., Water Dept.

CALIFORNIA STATE TRANSPORTATION AGENCY GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DISTRICT 11
4050 TAYLOR STREET, MS-240
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May 25, 2023

11- IMP-78
PM 1.6
USG Plaster City Quarry Expansion and Well No. 3 Project
Draft SEIR/SCH #20011121133

Ms. Diana Robinson
Planning Division Manager
Imperial County Planning and Development Services
801 Main Street
El Centro, CA 92243

Dear Ms. Robinson:

Thank you for including the California Department of Transportation (Caltrans) in the review for the Draft Subsequent Environmental Impact Report (SEIR) of USG Plaster City Quarry Expansion and Well No. 3 Project (SCH #20011121133) located near State Route 78 (SR-78) in Imperial County. The mission of Caltrans is to provide a safe and reliable transportation network that serves all people and respects the environment. The Local Development Review (LDR) Program reviews land use projects and plans to ensure consistency with Caltrans' mission and state planning priorities. Caltrans has the following comments:

Hauling

Caltrans has discretionary authority with respect to highways under its jurisdiction and may, upon application and if good cause appears, issue a special permit to operate or move a vehicle or combination of vehicles or special mobile equipment of a size or weight of vehicle or load exceeding the maximum limitations specified in the California Vehicle Code. The Caltrans Transportation Permits Issuance Branch is responsible for the issuance of these special transportation permits for oversize/overweight vehicles on the State Highway network. Additional information is provided online at: http://www.dot.ca.gov/trafficops/permits/index.html 3-1

If you have any questions, please contact Mark McCumsey at (619) 985-4957 or by email at mark.mccumsey@dot.ca.gov.

Sincerely,

Rogelio Sanchez for

MAURICE EATON
Branch Chief
Local Development Review

"Provide a safe and reliable transportation network that serves all people and respects the environment"

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Desert Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

June 2, 2023
Sent via email

Diana Robinson
Planning Division Manager
Imperial County Planning and Development Services Department
801 Main Street
El Centro, CA 92243

USG Plaster City Quarry Expansion and Well No. 3 Project (PROJECT)
Draft Subsequent Environmental Impact Report (DSEIR)
SCH# 2001121133

Dear Diana Robinson:

The California Department of Fish and Wildlife (CDFW) received a Draft Subsequent Environmental Impact Report (DSEIR) from the Imperial County Planning and Development Services Department (Imperial County) for the Project pursuant to the California Environmental Quality Act (CEQA) and CEQA guidelines[1].

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources. 4a-1

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[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CDFW is also submitting comments as a **Responsible Agency** under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's lake and streambed alteration regulatory authority. (Fish & G. Code, § 1600 et seq.) Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.), the project proponent may seek related take authorization as provided by the Fish and Game Code. 4a-1 Cont.

PROJECT DESCRIPTION SUMMARY

Proponent: United States Gypsum (USG)

Objective: The proposed Project consists of approval of a Conditional Use Permit from Imperial County for the development of a new production well, Well No. 3, and an associated pipeline to provide water to the USG Quarry. A Draft Final Environmental Impact Report/Environmental Impact Study was completed for the project in April 2006. On March 18, 2008, a Final Environmental Impact Report/Environmental Impact Study was certified by the Imperial County Board of Supervisors pursuant to the requirements of CEQA (SCH 2001121133). As such, the potential environmental impacts of the proposed quarry expansion and reclamation and development of Quarry Well No. 3 were previously evaluated in the 2008 Environmental Impact Report/Environmental Impact Study. Additional land use entitlements from Imperial County are not needed for mining and reclamation activities under the quarry expansion. However, because Well No. 3 would provide water to support quarry operations, this DSEIR evaluates potential environmental impacts associated with mining and reclamation activities under the quarry expansion. The DSEIR also evaluates potential environmental impacts associated with the restoration of the Viking Ranch site (207 acres) and preservation of the Old Kane Springs Road site (121 acres). USG identified these sites for preservation to provide compensatory mitigation for impacts to 139 acres of waters of the United States at the quarry. 4a-2

The Project includes expansion of the quarry areas on a series of mining claims to the south and southeast of the existing quarries. The existing and proposed quarry would be located primarily on private lands, but also would include new disturbance within mining claims on public lands managed by the Bureau of Land Management (BLM). The total acreage of USG's claims on public lands is 73.2 acres, and planned disturbance would be limited to 18.1 acres within them. The area proposed for continuing and future quarrying is on middle and lower slopes and a broad alluvial wash.

Well No. 3 would be located east of the existing quarry on a USG-owned parcel (APN 033-020-009) and would provide processing water via a 10-inch-diameter, approximately 3.5-mile-long underground pipeline that would be developed within the existing USG narrow-gauge railroad right-of-way. The pipeline would extend from Well No. 3 to the existing offload facility within the quarry processing area. In conjunction with the development of the pipeline, USG would install an electric supply line to serve the well pump. The power service line would be installed underground from the well head to the quarry gate, and power poles would be installed within the quarry site. The well would be approximately 6 inches in diameter and 565 feet in depth. The water would be used in the quarry for dust suppression on the haul roads and crushing equipment, for the watering of transplanted desert plant species during reclamation, and as a possible supply of potable water for use by employees.

The proposed pipeline would be constructed of high-density polyethylene pipe and would be installed at a depth of about 4 feet below the ground surface. The pipeline would be developed within the existing narrow-gauge railroad right-of-way that is already disturbed by an existing unpaved access road. A trench, approximately five feet wide and seven feet deep would be excavated between the railroad and access road for installation of the pipeline. Excavated soils would be temporarily stockpiled along the alignment and used as backfill. Import of fill material is not anticipated. Construction would occur within a 30-foot-wide area along the entire length of the pipeline alignment. Development of the pipeline would disturb approximately 12.7 acres (30 foot wide by 3.5 miles) of land, most of which is managed by the BLM. A portion of the right-of-way (3.75 acres) is located within the Anza-Borrego Desert State Park. All waterline/powerline construction areas would be restored to pre-project conditions following the completion of construction activities.

4a-2
Cont.

The proposed project also includes restoration and/or preservation of two proposed off-site mitigation sites (Viking Ranch restoration site and Old Kane Springs Road preservation site) in San Diego County for the purpose of mitigating anticipated impacts to jurisdictional waters within the quarry expansion area. These project components were not evaluated in the 2008 Environmental Impact Report/Environmental Impact Study or the 2019 Supplemental Environmental Impact Study but are undergoing environmental review in the DSEIR.

The Viking Ranch parcels were primarily former orchard land located north of Borrego Springs and within the Coyote Creek Wash. However, parcel 140-030-10-00 and the southwestern portion of parcel 140-030-11-00 are undeveloped and were not historically in agriculture. The proposed mitigation site is located approximately 26 miles from the USG Quarry. Viking Ranch was used for orchard production until the site was purchased by the Borrego Water District in 2017. Previous agricultural land modifications were constructed that diverted hydrology of Coyote Creek around the agricultural field. These topographic modifications included excavation of ditches and construction of berms to protect the orchard from flooding. The restoration program proposes to remove these diversion features to re-establish braided, unconstrained flow across the site, consistent with the existing Coyote Creek floodplain. Proposed restoration activities at the Viking Ranch site would include tree stump removal, grading, excavations, and revegetation of the site. These activities are expected to require the use of backhoes, a trencher, grader, dozer, and dump truck, as well as supply and water trucks. The Old Kane Springs Road Preservation Site would be preserved in its existing conditions. No construction or development is proposed at this site.

Location: The Project's proposed USG Quarry Well No. 3 is located in Imperial County on USG-owned property APN 033-020-009. It is located within Section 16 of Township 13 South, Range 09 East SBM.

The Project's proposed pipeline alignment is located in Imperial County within USG-owned property (APNs 033-020-009; 033-060-010 and -008); land owned by the U.S. Bureau of Land Management (BLM) (APNs 033-010-025 and -017; and 033-060-012); and Anza-Borrego Desert State Park (APN 033-010-016). The pipeline crosses Sections 16, 17, 18, and 19 of Township 13 South, Range 09 East SBM.

4a-2
Cont.

The Project's associated Viking Ranch restoration site is located in San Diego County and consists of approximately 150 acres of property owned by Borrego Water District (APNs 140-030-09-00 and -11-00); approximately 10 acres of privately owned property (APN 140-030-10-00); and approximately 47 acres of lands adjacent to these parcels that would be restored or enhanced. The adjacent lands consist of approximately 13 acres of land owned by the Anza-Borrego Foundation (APN 140-030-05-00), approximately 3 acres of State Park–owned land to the north of the restoration site, and approximately 31 acres of State Park–owned lands to the east of the restoration site (APN 140-030-07-00). The restoration site is located in the southeast corner of Section 4 of Township 10 South, Range 06 East SBM.

The Project's associated 121-acre Old Kane Springs Road preservation site is located in San Diego County on privately owned property (APN 253-150-34-00). The mitigation site is located in Section 18 of Township 12 South, Range 08 East SBM.

Timeframe: The proposed project and its associated mining and reclamation activities are anticipated to disrupt portions of the Project site for at least 80 years.

COMMENTS AND RECOMMENDATIONS

CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (i.e., biological resources). CDFW offers the comments and recommendations below to assist Imperial County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. The DSEIR has not adequately identified and

4a-3

disclosed the Project's impacts (i.e., direct, indirect, and cumulative) on biological resources and whether those impacts are reduced to less than significant.

CDFW's comments and recommendations on the DSEIR are explained in greater detail below and summarized here. CDFW is concerned that the DSEIR does not adequately identify or mitigate the Project's significant, or potentially significant, impacts to biological resources. CDFW also concludes that the DSEIR lacks sufficient information to facilitate a meaningful review by CDFW, including both a complete and accurate assessment of biological resources on the Project site. CDFW recommends that additional information and analyses be added to a revised DSEIR, along with avoidance, minimization, and mitigation measures that avoid or reduce impacts to less than significant. 4a-3 Cont.

Existing Environmental Setting

Compliance with CEQA is predicated on a complete and accurate description of the environmental setting that may be affected by the proposed Project. CDFW is concerned that the assessment of the existing environmental setting has not been adequately analyzed in the DSEIR. CDFW is concerned that without a complete and accurate description of the existing environmental setting, the DSEIR may provide an incomplete analysis of Project-related environmental impacts. 4a-4

The DSEIR lacks a recent and complete assessment of biological resources within the Project site and surrounding area. A complete and accurate assessment of the environmental setting and Project-related impacts to biological resources is needed to both identify appropriate avoidance, minimization, and mitigation measures and demonstrate that these measures reduce Project impacts to less than significant.

Mitigation Measures

CEQA requires that a DSEIR include mitigation measures to avoid or reduce significant impacts. CDFW is concerned that the mitigation measures proposed in the DSEIR are not adequate to avoid or reduce impacts to biological resources to below a level of significance. To support Imperial County in ensuring that Project impacts to biological resources are reduced to less than significant, CDFW recommends adding mitigation measures for an assessment of biological resources, bats, and the CDFW Lake and Streambed Alteration Program, as well as revising the mitigation measures (or sub-measures) for burrowing owl (*Athene cunicularia*), nesting birds, and artificial nighttime lightning. 4a-5

1) Assessment of Biological Resources

Page 3 of the Project's Biological Report indicates that biological surveys over the Project areas, including the quarry and proposed new pipeline, were conducted in October 2014, April and October of 2016, and March and April of 2017.

CDFW generally considers biological field assessments for wildlife to be valid for a one-year period. Section 15125(c) of the CEQA Guidelines states that knowledge of the regional setting of a project is critical to the assessment of environmental impacts, that special emphasis should be placed on environmental resources that are rare or unique to the region, and that significant environmental impacts of the proposed Project are adequately investigated and discussed. CDFW recommends that the DSEIR is revised to include the findings of a complete, *recent* inventory of rare, threatened, endangered, and other sensitive species located within the footprint of proposed Well #3 and its associated pipeline and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511). Based on findings from a recent biological inventory, CDFW recommends that the DSEIR is revised to include an analysis of direct, indirect, and cumulative impacts to biological resources and identification of appropriate avoidance, minimization, and mitigation measures.

The Project occurs in and adjacent to U.S. Fish and Wildlife Service (USFWS) critical habitat for Peninsular bighorn sheep (*Ovis canadensis*) and has the potential to impact this species both directly and indirectly. For example, Peninsular bighorn sheep rely on groundwater-dependent vegetation, especially during the dry summer months. Development of Well No. 3 may impact Peninsular bighorn sheep through drawdown of groundwater that results in fewer sources of forage plants. CDFW recommends that Imperial County seek current data on Peninsular bighorn sheep occurrence in the Project area in consultation with CDFW wildlife biologists (contact Jacob Skaggs at Jacob.Skaggs@Wildlife.ca.gov for more information) to ensure that data are recent and that direct and indirect impacts to this species from Project activities have been adequately analyzed in the CEQA document. CDFW recommends that the results of this consultation be included in a revised DSEIR. 4a-6

Additionally, because quarry expansion activities will impact different areas of undisturbed habitat over an 80-year period, CDFW recommends that additional surveys for rare, threatened, endangered, and other sensitive species are conducted over undisturbed areas proposed for quarry expansion prior to ground disturbance or vegetation removal activities.

CDFW recommends that Imperial County add in a revised DSEIR the following mitigation measure:

Mitigation Measure BIO-[A]: Assessment of Biological Resources

Prior to adoption of the CEQA document and Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought. 4a-6 Cont.

2) Burrowing Owl

Burrowing owl (*Athene cunicularia*) is a California Species of Special Concern. Take of individual burrowing owls and their nests is defined by Fish and Game Code section 86, and prohibited by sections 3503, 3503.5, and 3513. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703 et seq.). Take is defined in Fish and Game Code section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Page 33 of the Project's Biological Resources Technical Report dated March 2019 (Biological Report) indicates that suitable burrowing owl nesting and foraging habitat is present throughout the project area, and this species is considered to have moderate potential to nest in the Project area. The Biological Report also states that a single burrowing owl was observed during surveys for the project area in October 2014, and that subsequent surveys of the Project area conducted during the breeding season did not detect any burrowing owls. 4a-7

Importantly, because the Project's quarrying activities will occur over an 80-year period and undisturbed areas will be impacted at different times, CDFW recommends that focused and pre-construction burrowing owl surveys are completed each time the Project conducts ground disturbance and vegetation removal activities in a new undisturbed area.

Although the DSEIR includes Mitigation Measure 3.4-9 for burrowing owl, CDFW considers the measure to be inadequate in scope and timing to appropriately avoid, minimize, and mitigation impacts to burrowing owl. CDFW recommends that Imperial County revise Mitigation Measure 3.4-9 in a revised DSEIR, with additions in **bold** and removals in ~~strikethrough~~:

Mitigation Measure 3.4-9: Burrowing Owl Avoidance

Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with all Project components (expansion of quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch) over the lifetime of the Project. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent, in coordination with BLM, shall prepare a Burrowing Owl Plan that shall be submitted to CDFW and U.S. Fish and Wildlife Service (USFWS) for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval.

4a-7
Cont.

Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the *Staff Report on Burrowing Owl Mitigation* (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the *Staff Report on Burrowing Owl Mitigation*. If

the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities. ~~Burrowing Owl Avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where project activities will not be permitted. The buffer area will be based on the nature of project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, Burrowing Owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation (March 2012), including provision of replacement burrows prior to the exclusion.~~ 4a-7 Cont.

3) Nesting Birds

It is the Project proponent's responsibility to comply with all applicable laws related to nesting birds and birds of prey. Fish and Game Code sections 3503, 3503.5, and 3513 afford protective measures as follows: section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by Fish and Game Code or any regulation made pursuant thereto. Fish and Game Code section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by Fish and Game Code or any regulation adopted pursuant thereto. Fish and Game Code section 3513 makes it unlawful to take or possess any migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. § 703 et seq.). 4a-8

Page 4.2-26 indicates that suitable foraging and nesting habitat for protected bird species, as well as "stopover" habitat for migratory songbirds, is found throughout the Project area. Although the DSEIR includes a sub-measure in Mitigation Measure 3.4-8 for migratory birds, CDFW considers the measure to be insufficient in scope and timing to reduce impacts to a level less than significant. CDFW recommends that disturbance of occupied nests of migratory birds and raptors within the Project site and surrounding area be avoided **any time birds are nesting on-site.**

Importantly, because the Project's quarrying activities will occur over an 80-year period and undisturbed areas will be impacted at different times, CDFW recommends that pre-construction nesting bird surveys are completed each time the Project conducts ground disturbance and vegetation removal activities in a new undisturbed area.

CDFW recommends Imperial County revise the following sub-measure in Mitigation Measure 3.4-8, with additions in **bold** and removals in ~~strikethrough~~:

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures

[…]

~~To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.~~ **Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with all Project components (the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch) and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.** 4a-8 Cont.

[…]

4) Special-Status Bats

Page 4.2-24 of the DSEIR indicates that several special-status bats have at least a moderate potential to forage over the Project area, including the following California Species of Special Concern: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), western mastiff bat (*Eumops perotis californicus*), and pocketed free-tailed bat (*Nyctinomops femorosaccus*). The DSEIR further indicates that the 4a-9 gypsum cliffs in the quarry expansion areas and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. Project activities associated with the expansion of mining operations may impact bat roosts and result in injury or mortality to bats. Also, any artificial nighttime lightning associated with the Project may also negatively impact bats, and details on lighting plans and lightning specifications and appropriate avoidance, minimization, and mitigation measures are needed (see section below on Artificial Nighttime Lighting).

Page 4.2-59 of the EIR states that potential impacts to bats would be avoided or minimized through Mitigation Measure 3.4-8 (Wildlife Impact Avoidance and Minimization Measures). However, it is unclear which sub-measure in Mitigation Measure 3.4-8 would apply to bats. CDFW recommends focused surveys for the special-status species of bats discussed above are conducted prior to quarry expansion activities to inform appropriate avoidance, minimization, and mitigation measures. CDFW recommends that Imperial County add the following mitigation measure to a revised DSEIR:

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats

> **Prior to the initiation of Project activities within suitable bat roosting habitat, Imperial County shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.**
>
> **If active hibernacula or maternity roosts are identified in the work area or 500 feet extending from the work area during preconstruction surveys, for maternity roosts, quarry expansion activities into undisturbed habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.**

4a-9
Cont.

A minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat. 4a-9 Cont.

5) Artificial Nighttime Lighting

Page ES-18 of the DSEIR includes Mitigation Measure 3.4-8 that indicates the Project will "avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky." However, the DSEIR lacks a discussion of the lighting plans and lighting specifications that will be used across all Project components including quarry expansion activities, Well #3 and associated pipeline construction, and proposed mitigation sites. CDFW recommends that the DSEIR is revised to include a discussion of lightning plans and lightning specifications proposed to be used across all the Project's components to allow CDFW to conduct a meaningful review and provide expertise on activities that have the potential to adversely affect fish and wildlife resources. 4a-10

Additionally, because the Project is located within and adjacent to open-space areas that support Fully Protected Peninsular bighorn sheep (*Ovis canadensis*), several special-status species of bats, migratory birds that fly at night, and other nocturnal and crepuscular wildlife, CDFW recommends the DSEIR is revised to include an analysis of the direct, indirect, and cumulative impacts of artificial nighttime lighting expected to adversely affect biological resources surrounding the Project site. In general, available research indicates that artificial nighttime lighting alters ecological processes including, but not limited to, the temporal niches of species; the repair and recovery of physiological function; the measurement of time through interference with the detection of circadian and lunar and seasonal cycles; the detection of resources and natural predators; and navigation[2]. Further, many of the effects of artificial nighttime lighting on population- or ecosystem-level processes are still poorly understood suggesting that a precautionary approach should be taken when determining appropriate avoidance and minimization measures concerning artificial nighttime lighting.

Regarding impacts on bats, including the California Species of Special Concern discussed in the previous section, while artificial nighttime lighting can benefit some opportunistic bat species by providing a foraging resource where insect prey is attracted to lights,[3] numerous studies have shown that direct lighting on roost structures can have profound negative effects on bats roosting in those structures. For example, the complete abandonment (or significant reduction of the bat population) at human-made structures used by roosting bats following the installation of bright artificial lighting has been documented on multiple occasions (e.g., Boldogh et al. 2007; Rydell et al. 2017). Downs et al. (2003) found that the intensity of the artificial light near the roost affected the bats' behavior during emergence more than the color of the light, while Rydell et al. (2017) found that the loss of bat colonies at structures that were newly illuminated was most apparent when light was applied in such a manner that there was no dark corridor for the bats to exit and return to the roost.

4a-10
Cont.

Adverse effects from the illumination of a roost structure by artificial lights extend beyond simply having the potential to discourage further use of that structure by bats. For example, Boldogh et al. (2007) found that not only did bright artificial lighting at roosts delay the start of the emergence and/or prolong the duration of bats' emergence from that structure, but also juveniles at roost structures that were illuminated were significantly smaller than juveniles at roost structures that were not illuminated by bright artificial lights. The smaller body masses of juveniles at illuminated sites may be attributed to the delayed emergences at those sites, which not only reduces the total foraging time available for lactating female bats (and later, juveniles learning to hunt) each night, but also causes those bats to miss the peak insect abundance that occurs at dusk, reducing their foraging efficiency. These findings suggest that even if a maternity colony chooses to remain at a newly illuminated roost site, juvenile survivorship is negatively affected, and therefore the reproductive success of those colonies could be severely compromised.

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[2] Gatson, K. J., Bennie, J., Davies, T., Hopkins, J. *The ecological impacts of nighttime light pollution: a mechanistic appraisal.* Biological Reviews, 88.4 (2013): 912-927.

[3] It should be noted that because many insects congregate around artificial light sources and die from exhaustion, long-term reductions of insect populations from light pollution is expected to have significant adverse effects for predators of insects such as bats (Hölker et al. 2010).

Rydell et al. (2017) and Voigt et al. (2018) note that maintaining darkness at maternity roosts is particularly important because at these types of roosts, aggregations of bats are present consistently over a long period of time, individual bats emerge from predictable locations, and juvenile bats are learning how to fly. Illumination of a maternity roost renders the colony more vulnerable to opportunistic predators such as raptors and owls, and predator-avoidance behaviors such as delayed emergence times reduce their foraging opportunities, thereby lowering juvenile survivorship. Suitable maternity roost sites are a limited resource, and if an alternate roost site is not available, extirpation of the entire colony could occur as a result of artificial lighting. Various studies (e.g., Boldogh et al. 2007; Rydell et al. 2017; Voigt et al. 2018) have concluded that because bright artificial lighting at roost structures has significant negative effects on bats, including the potential for the extirpation of an entire maternity colony, the addition of lighting near an established roost should be considered during the environmental impact review process.

To support Imperial County in avoiding, minimizing, and mitigating the impacts of artificial nighttime lighting on biological resources, CDFW recommends that Imperial County revise the following sub-measure of Mitigation Measure 3.4-8 in a revised DSEIR as follows, with additions in **bold** and removals in ~~strikethrough~~: 4a-10 Cont.

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures

[...]

~~Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.~~ **Throughout the lifetime of the Project, the Project proponent shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all lighting for the Project is fully shielded, cast downward, reduced in intensity to the greatest extent, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). Imperial County shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.**

[...]

6) CDFW's Lake and Streambed Alteration Program

Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may do one or more of the following: substantially divert or 4a-11 obstruct the natural flow of any river, stream, or lake; substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or deposit debris, waste, or other materials that could pass into any river, stream, or lake. Note that "any river, stream, or lake" includes those that are episodic (i.e., those that are dry for periods of time) as well as those that are perennial (i.e., those that flow year-round). This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water.

Page 4.6-22 of the DSEIR indicates that the Project's Jurisdictional Delineation "identified a total 325.79 acres of unnamed streambeds within Quarry area and found that the expansion of quarrying activities would result in impacts to approximately 134.08 acres of CDFW, USACE, and RWQCB jurisdictional drainages." The DSEIR also indicates that "Well No. 3 and the water supply pipeline would result in filling of all ephemeral streambeds and washes within the waterline/powerline area, and that these activities would result in impacts to 0.21 acres of CDFW, USACE, and RWQCB jurisdictional drainages." Regarding the Restoration of Viking Ranch, Figure 2-6 of the DSEIR shows that restoration plans will involve removal and creation of berms, backfill of diversion ditches, installation of a grade structure, grading of ephemeral channels, and recontouring of areas of the floodplain within the Viking Ranch Project boundary. 4a-11 Cont.

The DSEIR includes Mitigation Measure 3.5-1f: "Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively."

In addition to this measure and to address requirements under CDFW's Lake and Streambed Alteration Program, CDFW recommends that Imperial County add the following mitigation measure to a revised DSEIR:

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program

> **Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.**

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make 4a-12 subsequent or supplemental environmental determinations. (Pub. Resources Code, § 21003, subd. (e).) Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be filled out and submitted online at the following link: https://wildlife.ca.gov/Data/CNDDB/Submitting-Data. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals. 4a-12 Cont.

ENVIRONMENTAL DOCUMENT FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of environmental document filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the environmental document filing fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs, tit. 14, § 753.5; Fish & G. Code, § 711.4; Pub. Resources Code, § 21089.) 4a-13

CONCLUSIONS

CDFW appreciates the opportunity to comment on the DSEIR to assist Imperial County in identifying and mitigating Project impacts to biological resources. CDFW concludes that the DSEIR does not adequately identify or mitigate the Project's significant, or potentially significant, impacts to biological resources. CDFW also concludes that the DSEIR lacks sufficient information for a meaningful review of impacts to biological resources, including a complete and accurate assessment of biological resources on the Project site. The CEQA Guidelines (§ 15088.5) indicate that recirculation is required when insufficient information in the DSEIR precludes a meaningful review. CDFW recommends that a revised DSEIR including a recent and complete assessment of impacts to biological resources (inclusive of recent data on Peninsular bighorn sheep), as well as lightning plans and design specifications, be recirculated for public comment. CDWF also recommends that revised and additional mitigation measures as described in this letter be added to a revised DSEIR to avoid or reduce significant impacts. 4a-14

CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts. Questions regarding this letter or further coordination should be directed to Jacob Skaggs, Environmental Scientist, at jacob.skaggs@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Kim Freeburn
84F92FFEEFD24C8...

Kim Freeburn
Environmental Program Manager

Attachment 1: MMRP for CDFW-Proposed Mitigation Measures

ec:

Heather Brashear, Senior Environmental Scientist (Supervisor), CDFW
Heather.Brashear@Wildlife.ca.gov

Office of Planning and Research, State Clearinghouse, Sacramento
state.clearinghouse@opr.ca.gov

Rollie White, U.S. Fish and Wildlife Service
rollie_white@fws.gov

Vincent James, U.S. Fish and Wildlife Service
vincent_james@fws.gov

REFERENCES

Boldogh, S.D., D. Dobrosi, and P. Samu. 2007. The Effects of the Illumination of Buildings on House-Dwelling Bats and Its Conservation Consequences. *Acta Chiropterologica* 9:527–534. doi:10.3161/1733-5329 (2007)9[527:TEOTIO]2.0.C;2.

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ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

4a-15

Mitigation Measures	**Timing and Methods**	**Responsible Parties**
Mitigation Measure BIO-[A]: Assessment of Biological Resources **Prior to adoption of the CEQA document and Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.**	**Timing**: Prior to adoption of the CEQA document and Project construction activities **Methods:** See Mitigation Measure	**Implementation**: Imperial County **Monitoring and Reporting**: Imperial County
Mitigation Measure 3.4-9: Burrowing Owl Avoidance **Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with all Project components (expansion of quarrying activities**	**Timing**: Prior to the start of Project-related activities for focused surveys. No less than 14 days prior to the start of Project-related activities and within 24	**Implementation**: Project proponent **Monitoring and Reporting**: Imperial County

into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch) over the lifetime of the Project. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent, in coordination with BLM, shall prepare a Burrowing Owl Plan that shall be submitted to CDFW and U.S. Fish and Wildlife Service (USFWS) for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. **Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the *Staff Report on Burrowing Owl Mitigation* (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the *Staff Report on Burrowing Owl Mitigation*. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance,**	hours prior to ground disturbance for preconstruction surveys. **Methods:** See Mitigation Measure	

minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities.		
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […] **Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with all Project components (the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch) and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.** […]	**Timing**: No more than 3 days prior to vegetation removal or ground-disturbing activities for all phases of the Project **Methods:** See Mitigation Measure	**Implementation:** Imperial County **Monitoring and Reporting**: Imperial County

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats **Prior to the initiation of Project activities within suitable bat roosting habitat, Imperial County shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.** **If active hibernacula or maternity roosts are identified in the work area or 500 feet extending from the work area during preconstruction surveys, for maternity roosts, quarry expansion activities into undisturbed habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.** **A minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise.**	**Timing**: Prior to grading or vegetation removal activities **Methods:** See Mitigation Measure	**Implementation**: Imperial County **Monitoring and Reporting**: Imperial County

Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.		
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […] **Throughout the lifetime of the Project, the Project proponent shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all lighting for the Project is fully shielded, cast downward, reduced in intensity to the greatest extent, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). Imperial County shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.** […]	**Timing**: Throughout the lifetime of the Project **Methods:** See Mitigation Measure	**Implementation:** Project proponent and Imperial County **Monitoring and Reporting**: Imperial County

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program **Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.**	**Timing**: Prior to construction and issuance of any grading permit **Methods:** See Mitigation Measure	**Implementation**: Project Sponsor **Monitoring and Reporting**: Imperial County

From: Skaggs, Jacob@Wildlife <Jacob.Skaggs@Wildlife.ca.gov>
Sent: Thursday, August 17, 2023 4:34 PM
To: Bruce Steubing; Diana Robinson
Cc: Brashear, Heather@Wildlife; Michael Abraham; Kristin Faoro; Justin Wood; Carrazco, Luis; John Bowsher (jbowsher@usg.com); John M. Bowman (JBowman@elkinskalt.com); Tricia Wotipka; msweesy@dudek.com; Stephen Lilburn (stephen@lilburncorp.com); Botta, Randy@Wildlife; Colby, Janene@Wildlife
Subject: RE: USG Plaster City Quarry Expansion and Well No. 3 Draft Subsequent Environmental Impact Report Follow-Up
Attachments: Lambing season Mine site.jpg; PBS Data FCM 2015-2022.jpg; PBS Data FCM Close-up 2015-2022.jpg; Prelambing season_Mine site.jpg; Summer mine site.jpg

Good afternoon, Bruce and Diana:

4b-1 Please find attached updated maps showing Peninsular bighorn sheep (PBS) use in the Project area for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). Below are CDFW's additional comments for the Imperial County for the Project, including updated analysis based on data in the attached maps and recommendation on how to avoid and reduce significant impacts to PBS.

4b-2 Based on GPS data collected between 2015 and 2022, PBS do not use the active mining area in the north half of the quarry but do utilize the currently undisturbed habitat within the proposed mine expansion area to the south. While the gypsum formations within the southern quarry boundary do not appear to be used much by PBS, clusters of location data surrounding the margins of the formations indicate that these areas do meet PBS needs (PCEs) particularly during the lamb-rearing and summer seasons (refer to close-up maps by season). Clusters of PBS data surrounding the gypsum formations and within the wash below the formations are most notable during the summer months (June – August). The drainages wrap around the formations and provide ephemeral water sources, and in times of drought provide forage opportunities since plants grow more readily in drainages and washes compared to the steep, rocky slopes above the formations. The washes do not make up "core PBS habitat" based on radio-collar data; however, at certain times of the year, the washes and drainages provide critical resources for PBS and are therefore just as important to survival as more frequently used areas. Furthermore, in practice, the gypsum formations next to the washes provide shade, shelter, and escape terrain regardless that it does not meet the strict definition of "escape terrain" described in the SEIR. There are no permanent water sources within the Fish Creek Mountains (FCM), yet despite this fact, radio-collared data collected from 2015 through May 2022 had not shown any movement of FCM ewes out of the area. However, in July 2022, one radio-collared ewe did move into the Coyote Mountains (south of the FCM) for a few days before returning to the FCMs. Due to the lack of permanent water sources in the FCM, small drainages that can collect and store water even for short periods of time and sustain plant growth are vital.

Radio-collared ewes do utilize the project area during the lamb-rearing season, and it is important to emphasize that the points on the map do NOT represent ALL movement data of radio-collared ewes since GPS data are only collected a few times per day, and the data only represent a small portion of the total ewe population and thus far no representation of ram use. Because there is radio-collared data within the project area during the lamb-rearing season, it is considered lamb-rearing habitat even if it doesn't meet the definition described in the USFWS Recovery Plan. A study conducted for CDFW by a graduate student (Kendall Hines), titled "Post-partum habitat use for Peninsular bighorn sheep (*Ovis canadensis nelsoni*) in Southern California, demonstrated that 3 of the 4 ewe groups studied moved closer to alluvial fan habitat during the post-partum period and that 2 of 4 ewe groups moved to lower elevation habitat. While the study was not conducted in the FCM, data indicate that ewes in the FCM also rely low elevation habitat near alluvial fans during the lambing season.
4b-3 Mitigation Measure 3.4-12 states that "*New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.* Does the above paragraph mean that only "NEW"

mining activities will not occur during the lambing season, but if new ground-disturbing activities were to start in 4b-3 Cont.
December, that they could continue to work during the lambing season? CDFW recommends that no mining activities
occur in the southern section of the quarry boundary during the lambing season or minimally not to occur during the 4b-4
peak of lamb-rearing season (February – April). Regardless, the mining expansion will result in loss of habitat for the ewes in this area. The magnitude of this loss will not be known without the continuation of radio-collar monitoring activities. Mitigation measure 3.5-1d, requires USFWS to provide a Biological Opinion about “*whether the proposed project is “likely or not likely to jeopardize” the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them”.* However, in order to make this assessment, USFWS will rely on data collected by CDFW; and therefore, mitigation funds should be made available to CDFW for on-going radio-collaring activities and field monitoring studies within the FCM.

4b-5

Radio-collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE’s are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG. However, we do not think a guzzler is currently warranted without first careful study and consideration since artificial water sources can often result in increased predation. So far we have had no documented cases of mountain lion predation in the FCM. Currently, there are 3 satellite-collars in the FCM that are scheduled to stop functioning before the end of the year. Once these collars stop functioning we will no longer be able to track the effects of future mining activity upon PBS. Therefore, CDFW recommends that funds be provided to CDFW for maintaining radio-collars on PBS over the life of the mining project. By August 24, 2023, CDFW will provide more specific recommendations on maintaining radio collars on PBS over the life of the mining project.

CDFW is available for a meeting to discuss these comments and recommendations with Imperial County. Please let us know if you have any questions. 4b-6

Thanks,

Jacob

Jacob Skaggs
Environmental Scientist
California Department of Fish and Wildlife
3602 Inland Empire Blvd, Ste C-220
Ontario, CA 91764
(760) 218-0320

From: Bruce Steubing <bsteubing@benchmarkresources.com>
Sent: Tuesday, July 11, 2023 4:40 PM
To: Skaggs, Jacob@Wildlife <Jacob.Skaggs@Wildlife.ca.gov>
Cc: Brashear, Heather@Wildlife <Heather.Brashear@Wildlife.ca.gov>; Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Diana Robinson <DianaRobinson@co.imperial.ca.us>; Kristin Faoro <kfaoro@benchmarkresources.com>
Subject: USG Plaster City Quarry Expansion and Well No. 3 Draft Subsequent Environmental Impact Report Follow-Up

WARNING: This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

From: Kristin Faoro
To: Kristin Faoro
Subject: FW: Additional Comments and Recommendations on USG Plaster City Quarry Expansion and Well No. 3 DSEIR (SCH 2001121133)
Date: Friday, September 1, 2023 9:15:47 PM

From: Skaggs, Jacob@Wildlife <Jacob.Skaggs@Wildlife.ca.gov>
Sent: Thursday, August 24, 2023 4:07 PM
To: Bruce Steubing <bsteubing@benchmarkresources.com>; Diana Robinson <DianaRobinson@co.imperial.ca.us>
Cc: Brashear, Heather@Wildlife <Heather.Brashear@Wildlife.ca.gov>; Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Kristin Faoro <kfaoro@benchmarkresources.com>; Justin Wood <jwood@aspeneg.com>; Carrazco, Luis <LCarrazco@usg.com>; John Bowsher (jbowsher@usg.com) <jbowsher@usg.com>; John M. Bowman (JBowman@elkinskalt.com) <JBowman@elkinskalt.com>; Tricia Wotipka <Twotipka@dudek.com>; msweesy@dudek.com; Stephen Lilburn (stephen@lilburncorp.com) <stephen@lilburncorp.com>; Botta, Randy@Wildlife <Randy.Botta@wildlife.ca.gov>; Colby, Janene@Wildlife <Janene.Colby@wildlife.ca.gov>
Subject: RE: Additional Comments and Recommendations on USG Plaster City Quarry Expansion and Well No. 3 DSEIR (SCH 2001121133)

Good afternoon, Bruce and Diana:

4c-1 Below are the California Department of Fish and Wildlife's (CDFW) additional comments and recommendations for the County of Imperial on the Draft Subsequent Environmental Impact Report for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). This email follows up on previous biological expertise provided to the County of Imperial by CDFW in a comment letter dated June 2, 2023 (attached) and an email (further below) dated August 17, 2023.

4c-2 Peninsular bighorn sheep (PBS) from the Vallecito Mountains (VM) also utilize the Fish Creek Mountains (FCM) on a seasonal basis within the West Side of the FCM. See the attached map that shows the breakdown of use in the FCM by both the FCM ewe group and the VM ewe group. To maintain a representative sample of collars within the FCM and VM populations, CDFW recommends that funds be provided to CDFW for maintaining a combination of GPS and Very High Frequency (VHF) collars on ten (10) PBS in the FCM and ten (10) PBS in the VM for the life of the mining project. See the table below for estimated costs for the work over a 10-year period:

This estimate includes 3 helicopter surveys and 3 captures over a 10-year period. Captures are for both the VM and FCM and surveys for just the FCM.

	Cost/unit	No. of units	10-year Study Cost	Comments
3-day Helicopter capture in Fish Creek and Vallecito Mtns.	$69,291.00	3	$207,873	Three 3-day captures on years 1, 4, and 7
20 Satellite Collars/capture (3-day capture)	$51,205	3	$153,615	Satellite collar life estimated at 3 years
1-day helicopter survey in Fish Creek Mountains	$40,791.00	3	$122,373	3 surveys at years 2, 6, and 10
ES Capture planning & implementation @ 88 hours/capture	$6,176.48	3	$18,529	Includes capture plan, capture prep, and managing capture
ES Survey planning & implementation @ 20 hours/survey	$1,403.75	3	$4,211	Includes survey plan, survey prep, and managing survey
ES GIS mapping & Analysis @ 10 hours/month	$701.87	120	$84,225	No. of units: 12 months/year at 10 years
All costs total			$590,826	
Collar, capture and surveys only total			$483,861	

Additionally, regarding Mitigation Measure 3.4-11 (PBS Monitoring and Reporting), this measure is the same as found in the 2019 Draft
Supplemental Environmental Impact Statement. However, the monitoring measure presented in the 2019 (and 2023) document is different from
the monitoring proposal CDFW discussed and provided to the U.S. Fish and Wildlife Service and the Bureau of Land Management. CDFW
recommends that this measure is revised to indicate that funding will be provided for the purchase of radio-collars and capture of ten (10) PBS in
the Fish Creek Mountains and ten (10) PBS in the Vallecito Mountains, not ten total in both areas. Additionally, monitoring under 3.4-11 should 4c-3
be for the life of the project with evaluation of collar numbers, capture hours, and funding allocation made every 10 years.

Again, CDFW is available for a meeting with the County of Imperial to answer any questions regarding these comments and recommendations. 4c-4

Sincerely,

Jacob

Jacob Skaggs
Environmental Scientist
California Department of Fish and Wildlife
3602 Inland Empire Blvd, Ste C-220
Ontario, CA 91764
(760) 218-0320

From: Skaggs, Jacob@Wildlife
Sent: Thursday, August 17, 2023 4:34 PM
To: Bruce Steubing <bsteubing@benchmarkresources.com>; Diana Robinson <DianaRobinson@co.imperial.ca.us>

From: Skaggs, Jacob@Wildlife <Jacob.Skaggs@Wildlife.ca.gov>
Sent: Thursday, August 31, 2023 9:25 AM
To: Bruce Steubing <bsteubing@benchmarkresources.com>; Diana Robinson <DianaRobinson@co.imperial.ca.us>
Cc: Brashear, Heather@Wildlife <Heather.Brashear@Wildlife.ca.gov>; Michael Abraham <MichaelAbraham@co.imperial.ca.us>; Kristin Faoro <kfaoro@benchmarkresources.com>; Justin Wood <jwood@aspeneg.com>; Carrazco, Luis <LCarrazco@usg.com>; John Bowsher (jbowsher@usg.com) <jbowsher@usg.com>; John M. Bowman (JBowman@elkinskalt.com) <JBowman@elkinskalt.com>; Tricia Wotipka <Twotipka@dudek.com>; msweesy@dudek.com; Stephen Lilburn (stephen@lilburncorp.com) <stephen@lilburncorp.com>; Botta, Randy@Wildlife <Randy.Botta@wildlife.ca.gov>; Colby, Janene@Wildlife <Janene.Colby@wildlife.ca.gov>
Subject: RE: Additional Comments and Recommendations on USG Plaster City Quarry Expansion and Well No. 3 DSEIR (SCH 2001121133)

Good morning, Bruce and Diana:

Thank you for incorporating most of CDFW's comments and recommendations into the DSEIR for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH 2001121133). CDFW has the following additional comments and recommendations based on the proposed edits to mitigation measures in the DSEIR that were submitted to CDFW on August 25, 2023. 4d-1

For Mitigation Measure 3.4-9: Burrowing Owl Avoidance
If the preconstruction surveys confirm occupied burrowing owl habitat, CDFW recommends the County of Imperial and Project applicant coordinate with CDFW to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW prior to commencing Project activities. Appropriate avoidance, minimization, and mitigation measures should be determined on a case-by-case basis in coordination with CDFW and can vary depending on the circumstances such as location of burrow and distance from Project activities, type of project activities nearby, time of year, status of young, and other factors. 4d-2

For Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures
CDFW continues to recommend that Imperial County compensate at no less than 2:1 for permanent impacts to roosting habitat for special-status bat species. If the Project results in a permanent loss of roosting habitat for special-status bat species, this action is appropriately compensated through the perpetuity conservation of other roosting habitat for special-status bat species. 4d-3

Please let us know if you have any questions.

Jacob

Jacob Skaggs
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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
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www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

October 27, 2023
Sent via email

Diana Robinson
Planning Division Manager
Imperial County Planning and Development Services Department
801 Main Street
El Centro, CA 92243

USG Plaster City Quarry Expansion and Well No. 3 Project (PROJECT)
Draft Subsequent Environmental Impact Report (DSEIR)
SCH# 2001121133

Dear Diana Robinson:

The California Department of Fish and Wildlife (CDFW) submitted comments and recommendations to the County of Imperial (County) on the draft Subsequent Environmental Impact Report (SEIR) for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH# 2001121133) in a letter dated June 2, 2023, and in emails submitted on August 17, 2023, and August 24, 2023. On October 20, 2023, CDFW received a copy of the Admin Final SEIR that included responses to CDFW comments and recommendations and revisions to the SEIR. Thank you for incorporating many of CDFW's recommendations into the SEIR and for providing CDFW the opportunity to provide additional comments, which are included below. 4e-1

<u>Funding to maintain collars on 20 Peninsular bighorn sheep (*Ovis canadensis)* over the lifetime of the Project</u>

Regarding CDFW's recommendation in its August 24, 2023, email that funds are provided to CDFW for maintaining a total of 20 GPS and Very High Frequency (VHF) collars on Peninsular bighorn sheep (PBS; Fully Protected Species) in the Fish Creek Mountains (FCM) and Vallecito Mountains (VM), the County did not incorporate this recommendation into the SEIR indicating "the commenter fails to identify a new potential impact that would require further mitigation beyond that already required for the project." The Project's potential impacts to PBS are discussed in CDFW's August 17, 2023, email, where it was indicated that "the mining expansion will result in loss of habitat for the ewes in this area. The magnitude of this loss will not be known without the continuation of radio-collar monitoring activities. […] Radio-collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE's [(Primary Constituent 4e-2

Elements)] are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG.” In its August 24, 2023, email, CDFW indicates that a total of 20 collars are needed to “maintain a representative sample of collars with the FCM and VM populations.”

CDFW also recommended in its email dated August 24, 2023, that funding is provided for monitoring of PBS over the lifetime of the Project. The County did not incorporate this recommendation stating that “the commenter fails to identify a new potential impact that would require further mitigation beyond that already required for the project.” As CDFW has discussed in its comments and recommendations, the Project’s potential impacts to PBS are protracted over the 80-year timeframe of mining expansion activities, and PBS monitoring using collars over the life of the mining project is necessary to determine the extent of these potential impacts and inform appropriate avoidance, minimization, and mitigation measures. In its August 17, 2023, email, CDFW describes PBS use of the currently undisturbed habitat within the proposed mine expansion area in the southern portion of the Project area and discusses why these areas are important for PBS and their life-cycle needs. CDFW further states that “radio collars on PBS will need to be maintained in the FCM in order to assess how mining expansion may affect PBS, particularly with regards to water needs (both from the mining site removal of drainages and washes that provide ephemeral water and foraging opportunities, particularly during the spring and summer months) and the possibility of draw-down of the aquifer from the canyon associated with the well site. If data indicates that PCE’s are not being met due to the reasons listed above, funds should be set aside for the possibility of adding an artificial water source (guzzler system) that is built and maintained by USG. […] Currently, there are 3 satellite-collars in the FCM that are scheduled to stop functioning before the end of the year. Once these collars stop functioning we will no longer be able to track the effects of future mining activity upon PBS.” CDFW reiterates that PBS is a Fully Protected species that may not be taken or possessed at any time, and the County is required to demonstrate that the Project is avoiding the take of PBS over its 80-year timeframe. CDFW recommends that the County and Project proponent assess the Project’s long-term potential impacts to PBS through maintaining a total of 20 GPS and VHF collars on FCM and VM populations over the lifetime of the Project.

4e-2
Cont.

To avoid or reduce impacts to below a level of significance, CDFW recommends that the County revise Mitigation Measure 3.4-11 of the Draft SEIR with the following additions in **bold** and removals in ~~strikethrough~~:

Mitigation Measure 3.4-11: PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by **providing** funding to maintain ~~the purchase of~~ **a combination of** radio **and VHF** collars ~~and the capture of~~ **on** ten (10) PBS in the Fish Creek **and ten (10) PBS in the** Vallecito Mountains Ewe Group areas~~, to provide location monitoring data over~~ **for the life of the**

mining Project ~~a ten-year period~~. ~~The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW.~~ **Evaluation of collar numbers, capture hours, and funding allocation shall be made every 10 years throughout the life of the Project in coordination with CDFW.** 4e-2 Cont.

Pursuant to the CEQA Guidelines, section 15097(f), CDFW has prepared a draft mitigation monitoring and reporting program (MMRP) for revised Mitigation Measures 3.4-11 and Mitigation Measure BIO-[B]. 4e-3

<u>Compensatory mitigation for impacts to roosting habitat for special-status bats</u>

In its June 2, 2023, letter, CDFW recommends that the County add a new Mitigation Measure BIO-[B] for Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats. CDFW appreciates that the County adopted a modified version of Mitigation Measure BIO-[B]. However, the modified version of the measure excludes the sentence “Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.” In its response submitted to CDFW on October 20, 2023, the County stated that “proposed compensation is not necessary, as there is abundant suitable habitat on public lands throughout the surrounding area.” In Comment 5b-5, the County further indicates that the “potential loss of rock crevices on the site would not significantly affect roost site availability in the Fish Creek Mountains or the surrounding region. The Project site is adjacent to the Fish Creek Mountains Wilderness managed by the BLM, comprising more than 21,000 acres, and Anza Borrego Desert State Park, comprising more than 600,000 acres. […] Both the Fish Creek Wilderness and Anza Borrego Desert State Park permanently protect extensive areas of rugged desert mountain landscapes where rock crevices suitable for bat roosting are abundant. Roosting crevice availability does not appear to limit local special status bat populations.” 4e-4

CDFW notes that the presence of surrounding protected areas that may include roosting habitat for special-status bat species does not compensate for the Project’s potential permanent impacts to roosting habitat for special-status bat species. The EIR must identify potentially feasible mitigation measures that avoid or reduce each significant impact. CDFW has identified potentially feasible mitigation measures to substantially lessen the significant impact (CEQA Guidelines §§ 15086, subd. (d), 15204, subd. (f)). CDFW believes that if roosting habitat for special-status bat species is permanently impacted by the Project, the appropriate potentially feasible mitigation measure to substantially lessen the significant impact is the in-perpetuity conservation of roosting habitat suitable for the special-status bat species that were negatively impacted. CDFW recommends that the Mitigation Measure BIO-[B] included in the County’s October 20, 2023, response is further revised to include the following addition in **bold**:

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats:

Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply:

- For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.
- For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. **Imperial County**

4e-4
Cont.

> **shall compensate no less than 2:1 for permanent impacts to roosting habitat.** 4e-4 Cont.

CDFW appreciates the opportunity to comment on the DSEIR to assist Imperial County in identifying and mitigating Project impacts to biological resources. CDFW concludes that the draft SEIR does not adequately mitigate the Project's significant, or potentially significant, impacts to biological resources. To avoid or reduce impacts to below a level of significance, CDFW recommends that revised mitigation measures as described in this letter be added to a revised draft SEIR. 4e-5

CDFW personnel are available for consultation regarding biological resources and strategies to minimize impacts. Questions regarding this letter or further coordination should be directed to Jacob Skaggs, Senior Environmental Scientist (Specialist), at jacob.skaggs@wildlife.ca.gov.

Sincerely,

DocuSigned by:
Kim Freeburn
84F92FFEEFD24C8...

Kim Freeburn
Environmental Program Manager

Attachment 1: MMRP for CDFW-Proposed Mitigation Measures

ec:

Heather Brashear, Senior Environmental Scientist (Supervisor), CDFW
Heather.Brashear@Wildlife.ca.gov

Office of Planning and Research, State Clearinghouse, Sacramento
state.clearinghouse@opr.ca.gov

ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

4e-8

Mitigation Measures	**Timing and Methods**	**Responsible Parties**
Mitigation Measure 3.4-11: PBS Monitoring and Reporting. **USG will support the CDFW PBS monitoring and reporting program within the federal action area by providing funding to maintain a combination of radio and VHF collars on ten (10) PBS in the Fish Creek and ten (10) PBS in the Vallecito Mountains Ewe Group areas for the life of the mining Project. Evaluation of collar numbers, capture hours, and funding allocation shall be made every 10 years throughout the life of the Project in coordination with CDFW.**	**Timing**: Throughout the life of the Project. **Methods:** See Mitigation Measure	**Implementation**: Project Proponent and County of Imperial **Monitoring and Reporting**: County of Imperial
Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats **Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be**	**Timing:** Prior to initiation of quarrying activities into previously undisturbed areas throughout the life of the Project **Methods:** See Mitigation Measure	**Implementation**: Project Proponent and County of Imperial **Monitoring and Reporting**: County of Imperial

used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply: • **For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.** • **For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.**		

USG

RECEIVED

JUN 05 2023

IMPERIAL COUNTY
PLANNING DEVELOPMENT SERVICES

June 2, 2023

VIA E-MAIL AND U.S. MAIL

Diana Robinson
Planning Division Manager
Imperial County Planning and Development
Services Department
801 Main St.
El Centro, CA 92243
E-Mail: Diana.Robinson@co.imperial.ca.us

Re: Comments on Draft Subsequent Environmental Impact Report for the USG Plaster City Quarry Expansion and Well No. 3 Project (SCH No. 2001121133)

Dear Ms. Robinson:

United States Gypsum Company ("USG") respectfully submits the following comments on the above-referenced Draft Subsequent Environmental Impact Report ("DSEIR").

I. Project Description and Scope of the DSEIR

The project that is the subject of the DSEIR (the "Project") includes the following:

5a-1

- The development of a new production well (Well No. 3) and associated pipeline to provide water to USG's Plaster City Quarry ("Quarry"); and
- Restoration of the Viking Ranch site, and preservation of the Old Kane Spring Road site, as described in the Habitat Mitigation and Monitoring Plan that was developed in connection with the 2019 Supplemental Environmental Impact Statement (the "2019 SEIS").

In addition, the DSEIR states that it "evaluates" the potential environmental impacts associated with mining and reclamation activities associated with the Quarry expansion 5a-2

("Quarry Activities"). It should be made clear, however, that these impacts were previously evaluated in the EIR/EIS that was certified by the Imperial County Board of Supervisors (the "Board") in 2008 for the USG Expansion/Modernization Project (the "2008 EIR") and in the 2019 SEIS, and that no significant changes have been proposed relative to the Quarry Activities as described in those documents. Consequently, with respect to the Quarry Activities, the primary focus and intent of the DSEIR is to (1) update the 2008 EIR by incorporating the information and mitigation measures that were developed as part of the 2019 SEIS, and (2) to evaluate whether there have been any changes in the circumstances surrounding the Quarry Activities, or any new information concerning the Quarry Activities, that raise any new or substantially more severe impacts on the environment as compared to the analysis contained in the 2008 EIR. 5a-2 Cont.

II. Project Alternatives

The DSEIR identifies and evaluates five alternatives to the Project. With the exception of the "no project" alternative (Alternative 1), each of these alternatives (Alternatives 2 through 5) involve reductions in the "footprint" of mining activities at the Quarry. The DSEIR concludes that Alternative 5, which represents the greatest overall reduction in the footprint of mining activities, is the "environmentally superior alternative." (DSEIR, p. 6-29.) 5a-3

Discussion of Alternatives 2 through 5 (the "Quarry Alternatives") in the DSEIR was arguably unnecessary because (1) the impacts associated with proposed Quarry Activities were previously evaluated in the 2008 EIR and were determined by the County to be mitigated to a level of insignificance,[1] and (2) the DSEIR does not identify any new or substantially more severe impacts associated with Quarry Activities due to any changed circumstances or new information. 5a-4

In any event, the Quarry Alternatives discussed in the DSEIR must be considered in context and must be evaluated in relation to the objectives of the Project, as discussed below. 5a-5

A. Source and Previous Consideration of Quarry Alternatives

The Quarry Alternatives presented in the DSEIR were derived from, and are identical to, alternatives that were evaluated in the 2019 SEIS prepared by the United States Bureau of Land Management ("BLM"). At the time the 2019 SEIS was prepared, USG had been working with the United States Army Corps of Engineers ("USACE") on an application for a Section

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[1] See Findings of Fact and Statement of Overriding Considerations for the United States Gypsum Companies Expansion/Modernization Project adopted by the Board in 2008.

404 Individual Permit to address impacts to waters of the United States associated with the Quarry expansion. The alternatives presented in the 2019 SEIS included a range of alternatives that were developed in coordination with USACE to evaluate potential modifications to Quarry operations to reduce impacts to waters of the United States as required by the Section 404(b)(1) Guidelines (40 CFR 230 et seq.).

The Section 404(b)(1) Guidelines suggest a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 CFR Part 230.10(d)).

Under the Section 404(b)(1) Guidelines (40 CFR 230 *et seq.*), an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge can be authorized. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into waters of the United States if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 CFR Part 230(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of the overall project purpose (40 CFR Part 230(a)(2)). The thrust of the Guidelines is that the proposed project achieves the overall project purpose while avoiding impacts to the aquatic environment to the maximum extent practicable.

5a-5
Cont.

From 2018 through 2019, USG worked collaboratively with the USACE in the preparation of an alternatives analysis in which a reasonable range of on-site and off-site alternatives were identified, and a list of criteria was developed to screen each alternative for practicability. On-site project alternatives were screened for practicability based on achieving the overall project purpose, logistics, and environmental criteria. The logistics criteria consisted of the evaluation of a balanced, multifaceted mining approach and exposure of mining personnel to human health and safety risks due to the creation of geological hazards such as catastrophic flooding. The on-site alternatives that were selected and ultimately evaluated in the 2019 SEIS (*i.e.*, the Quarry Alternatives) considered various mining footprint reconfigurations in an attempt to minimize impacts to waters of the United States in addition to exploring additional mining methods that would minimize surface area disturbances.

The overall Project purpose, which was determined by defining the basic Project purpose in a manner that more specifically describes USG's goals for the Project, served as the basis for the USACE's Section 404(b)(1) alternatives analysis. USACE, USG, and the United States Environmental Protection Agency (EPA) coordinated extensively in the development of an overall project purpose that met the needs of USG while adhering to the guidance prescribed by the EPA.

The overall Project purpose as agreed to by all parties on June 13, 2018, is:

> *To maintain a reliable supply of gypsum ore to existing processing facilities in order to produce gypsum-related agricultural products and residential and commercial building products including, but not limited to, wallboard, cement, industrial and building plasters, stucco, soil amendments and conditioners, and gypsum by-products, at levels consistent with current and projected demand in the southwestern United States.*

5a-5
Cont.

In light of this overall Project purpose, a preliminary practicability determination was developed in consultation with USACE staff. That determination, which is summarized in Exhibit 1 and incorporated herein by this reference, concluded that USG's proposed Project was the least environmentally damaging practicable alternative.

On June 22, 2020, the Navigable Waters Protection Rule went into effect thereby redefining the definition of waters of the United States to exclude "ephemeral features" as waters of the United States. Consequently, upon confirmation that waters of the United States were now absent from the Project area, USG withdrew its application for a Section 404 Individual Permit. However, in its Record of Decision issued in January 2020 ("ROD"), the BLM selected the Project over the Quarry Alternatives based on information contained in the 2019 SEIS and other factors, including "BLM's purpose and need, the highest and best use of public lands, public comments and stakeholder interests, economic and technical information, and applicable law and policy." (ROD, p. 6.)

B. The Quarry Alternatives Would Not Achieve Any Project Objectives and Need Not Be Further Considered

5a-6

The DSEIR identifies the following objectives for the Project:

1) Secure permits and approvals to continue and fully develop quarrying gypsum reserves;

2) Maximize the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life;

3) Meet market demands for gypsum products;

4) Develop and maintain a replacement Quarry water supply designed to meet dust suppression requirements;

5) Concurrently reclaim Quarry site for post-mining uses as Open Space;

6) Secure permits and approvals to develop a water source to support the mining of gypsum reserves at the Quarry; and

7) Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the Porter Cologne Act. (DSEIR, p. 2-11.)

5a-6
Cont.

The Quarry Alternatives are not relevant to Project objective numbers 4 through 7. Moreover, none of the Quarry Alternatives would achieve Project objective numbers 1, 2 or 3. Specifically, none of the Quarry Alternatives would "fully develop" quarrying gypsum reserves, "maximize" the recovery of known gypsum reserves needed for the Plant to fulfill its estimated operational design life, or "meet market demands" for gypsum products.

According to the Imperial County General Plan, the Fish Creek Mountains gypsum deposit associated with the Quarry constitutes the largest reserves of this mineral in California and represents a significant source of gypsum in the region and on the west coast (Sharpe and Cork 1995). More than 31.2 million tons of gypsum has been extracted from this deposit; of that, 30.1 million tons have been extracted by USG since 1945 (Resource Design Technology Inc. 2006). Since 1984, an average of one million tons of gypsum is produced by USG's Plaster City Plant (the "Plant") each year. This is the sole active gypsum quarry in the County, and the largest gypsum quarry in the United States. The Quarry accounts for 52 percent of statewide gypsum production, and the expected life of the remaining deposit exceeds 80 years under the proposed mining plan (Resource Design Technology Inc. 2006).

5a-7

Gypsum demand depends principally on the strength of the construction industry, particularly in the United States, where the majority of gypsum consumed is used for building plasters, the manufacture of Portland cement, and wallboard products (USGS 2018). Gypsum can also be mined and milled to produce plastic fillers and fire retardants that require high-purity gypsum and calcium sulfate. Expanding technology has developed applications for gypsum in plastics, paper, paint, coatings, rubber, and adhesives, as well as pharmaceuticals, food, and other uses. USG's gypsum at the Quarry offers improved performance as it is exceptionally pure, and the deposit contains high brightness/whiteness rock with strong chemical stability. High-purity gypsum is especially important in applications supporting the Portland cement industry where impurities can have an adverse effect on cement hydration and overall material strength. High-purity gypsum is also required in agricultural applications where water-soluble products such as USG's Ben Franklin® Brand Aquacal™ Gypsum require extremely high-purity material to provide an ultrafine natural source of calcium and sulfur that helps promote plant growth in crops, lawns, and gardens in an environmentally safe and non-toxic manner.

Historically, USG has met industry demands by increasing gypsum rock recovery and production during times of economic growth. Population growth in the southwestern United States is anticipated to continue at a rapid rate in the first part of the 21st century. New housing must be constructed, and existing older housing stock must be rehabilitated, to meet projected needs. Over a 50-year period beginning after the Second World War, California added approximately 500,000 housing units each year. As the southwest region of the United States continues to grow, that growth requires the development of additional housing and support services in the form of new commercial, office, and industrial development. This development is anticipated to require additional building materials at an increasing rate. USG has studied these growth trends and has anticipated a need to increase production at its Quarry and associated Plant to supply the projected demand for wallboard and related products and to continue providing gypsum to the agriculture industry and cement manufacturers. 5a-7 Cont.

Located in western Imperial County, the Quarry and Plant are optimally situated to mine and process this important mineral and supply California and the southwestern region of the United States with its products, mainly wallboard products and cement rock. All other west coast gypsum production plants rely on less pure, waterborne rock shipments from Mexico. The Quarry is located close to major interstate and intrastate highways, which makes it suitable for consumers who choose to purchase raw gypsum directly from the Quarry. Access to the Quarry is via State Route 78 from both San Diego and Imperial counties. The site is also accessible to Southern California and Arizona via State Route 86 to Interstate 10 and Interstate 8. The Plant, located 26 miles southeast of the Quarry, is also located less than 15 miles from the United States/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Each of the Quarry Alternatives would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands, and therefore fail to meet the overall purpose of the Project. For this reason, and based on the rationale contained in Exhibit 1, the Quarry Alternatives need not be further considered in the Final Subsequent Environmental Impact Report for the Project ("FSEIR") and should be rejected by the County and responsible agencies because they fail to achieve any of the stated objectives of the Project. 5a-7 Con.

III. There Are No "Waters of the United States" Within the Project Area

The DSEIR is replete with reference to "waters of the United States" within the Project area. However, as noted above, on June 22, 2020, the Navigable Waters Protection Rule went into effect thereby redefining the definition of waters of the United States to exclude "ephemeral features" as waters of the United States. As such, "ephemeral features" were no longer regulated as waters of the United States under the Clean Water Act, meaning that a USACE permit would no longer be required to discharge fill material into "ephemeral features."[2] 5a-8

USG filed a formal request with the USACE for an Approved Jurisdictional Determination on November 10, 2020. On February 8, 2021, the USACE issued an Approved Jurisdictional Determination ("AJD") confirming that waters of the United States were now absent from the Project area. A copy of the AJD is attached hereto as Exhibit 2.

In light of the AJD, the FSEIR should correct the many references to "waters of the United States" and related permitting requirements (*e.g.*, Section 404 permit) in the DSEIR, as needed. Some (but not necessarily all) of these references, along with our suggested edits, are included in the Table of Errata attached hereto as Exhibit 4.

IV. Mitigation Measures

The DSEIR identifies three categories of mitigation measures, including: 5a-9

- Mitigation measures from the 2008 EIR;

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[2] See also *Sackett v. Environmental Protection Agency*, 598 U.S. ___ (No. 21–454, decided May 25, 2023) (To establish jurisdiction under the Clean Water Act, it must be shown that a wetland has "a continuous surface connection with" a relatively permanent body of water connected to traditional interstate navigable waters).

- Mitigation measures from the 2019 SEIS, which have been incorporated into the DSEIR; and
- Newly proposed mitigation measures, which generally apply to the proposed quarry well and associated pipeline and/or the restoration/preservation of the Viking Ranch and the Old Kane Spring Road sites.

USG is fully committed to, and is bonded for, compliance with all of the measures identified in the 2008 EIR and the 2019 SEIS and has either complied with or is in the process of complying with each of these measures at this time.

USG's comments on specific mitigation measures are set forth below. Where revisions to mitigation measures have been proposed, we request that the revisions be made to the mitigation measures wherever they appear throughout the document. 5a-9 Cont.

A. Mitigation Measures 4.1-1a and 4.1-1b

These newly proposed mitigation measures were identified in the DSEIR for the specific purpose of addressing the potential impacts on air quality (Impact 4-1-2) as a result of activities associated with the Viking Ranch restoration. (See DSEIR, pp. 4.1-23 through 4.1-25.) However, by their terms, the mitigation measures would apply "throughout project construction activities ...," which could be interpreted to mean that these measures also apply to Quarry Activities and other components of the overall Project. Consequently, these measures should be revised to clarify that they are intended to apply only to the Viking Ranch restoration. Specifically, for both measures, the phrase "throughout project construction activities" should be changed to "throughout construction activities associated with Viking Ranch restoration." 5a-10

B. Mitigation Measure 3.5-1f

Mitigation measure 3.5-1f, which is from the 2008 EIR, is intended to address potential impacts on State or Federally Protected Wetlands (Impact 4.2-3). This measure requires that USG contact the California Department of Fish and Wildlife ("CDFW") and the USACE to determine whether either agency holds jurisdiction over the Quarry wash. 5a-11

In accordance with mitigation measure 3.5-1f, USG contacted the USACE in 2020. As noted above, the USACE responded on February 8, 2021, by issuing the AJD, which confirmed that no waters of the United States are present within the Project area. Therefore, while coordination with CDFW is still required, no additional coordination with USACE is necessary. Accordingly, mitigation measure 3.5-1f should be revised as follows:

> ***Mitigation Measure 3.5-1f**: Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the ~~CDFG and the US Army Corps of Engineers~~ California Department of Fish and Wildlife (CDFW) to determine whether ~~either agency~~ CDFW holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code ~~or Section 404 of the Federal Clean Water Act, respectively~~.*

5a-11
Cont.

C. Mitigation Measure 3.5-1d

Mitigation measure 3.5-1d, which is from the 2008 EIR, is intended to address potential effects on Peninsular bighorn sheep. USG has already complied with this measure by consulting with the USFWS under Section 7 of the Federal Endangered Species Act and successfully obtaining a Biological Opinion from the USFWS. 5a-12

For clarity, the FSEIR should acknowledge that this measure has been implemented and that "re-initiation" of Section 7 consultation is not required for any component of the Project.

D. Mitigation Measure 4.4-1

Mitigation measure 4.4-1 is a newly proposed mitigation measure that is intended to address the potential impacts of the proposed well, well pipeline, and Viking Ranch restoration on paleontological resources (Impact 4.4-1). The measure requires that pedestrian field surveys be conducted and to locate any surficial fossil localities and verify the underlying geologic units, and requires that a Paleontological Resources Monitoring and Mitigation Plan ("PRMMP") be prepared and implemented for any areas where "potential resources cannot be avoided by proposed construction activities." 5a-13

We request that this measure be revised to make it clear that a PRMMP is required only for resources that are (1) identified in the field survey, and (2) cannot be avoided by proposed construction activities. Furthermore, since this measure will apply to areas that are not subject to BLM jurisdiction (*i.e.*, the mitigation sites), the references to BLM are inapposite and unnecessary. More specifically, we propose the following revisions:

> ***Mitigation Measure 4.4-1****: Preconstruction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources are identified in a preconstruction field survey and cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a ~~BLM-permitted~~ qualified paleontologist and approved by ~~the BLM and~~ Imperial County.*

5a-13 Cont.

E. Mitigation Measure 4.6-1

Mitigation measure 4.6-1 is intended to address the potential impacts on hydrology and water quality (Impact 4.6-3). The DSEIR identifies mitigation measure 4.6-1 as a "newly proposed" mitigation measure. (See DSEIR, pp. ES-27 and 4.6-28.) However, this mitigation measure was identified in the 2019 EIS and compliance with this measure has already been achieved. Revisions to the DSEIR should be made in the FSEIR as needed to clarify the source and purpose of mitigation measure 4.6-1. 5a-14

F. Mitigation Measure 4.3-2

Mitigation measure 4.3-2 is a newly proposed mitigation measure that is intended to address the potential impacts associated with the inadvertent discovery of human remains. However, the citation to the applicable CEQA Guideline is incorrect. Specifically, the reference to CEQA Guidelines Section 15064.4(e)(1) should be changed to Section 15064.5(e). 5a-15

V. Old Kane Spring Road Site

The DSEIR, at pages 4.2-33 through 4.2-34, discusses the aquatic jurisdictional resources that are present at the Old Kane Spring Road site. This discussion, which is based on an initial jurisdictional aquatic resources delineation prepared by Dudek in 2021 (see Appendix E of Appendix D-4), concludes, among other things, that there are approximately 60.99 acres of RWQCB-jurisdictional non-wetland waters present on the site. 5a-16

An updated jurisdictional aquatic resources delineation for the Old Kane Spring Road Site was prepared by Dudek in April 2022 (the "2022 JARD"). The 2022 JARD concludes, among other things, that there are approximately 88.5 acres of RWQCB-jurisdictional non-wetland water present on the site. A copy of the 2022 JARD is attached hereto as Exhibit 3.

The DSEIR's discussion of aquatic jurisdictional resources present at the Old Kane Spring Road site, including Table 4.2-4, should be updated based on the information in the 2022 JARD. In addition, Figure 2-4 on page 2-17 of the DSEIR (Old Kane Spring Road Preservation Site) should be replaced with Figure 4 from the 2022 JARD.

5a-16
Cont.

VI. Specific Comments and Errata

USG's additional comments and proposed revisions to specific provisions of the DSEIR are listed in the Table of Errata attached hereto as Exhibit 4 and are incorporated herein by this reference.

5a-17

VII. Conclusion

USG appreciates this opportunity to comment on the DSEIR and looks forward to working with the County, other public agencies, and members of the public in the upcoming permitting process.

Sincerely,

Luis Carrazco

Luis Carrazco,
Plant Manager

5a-18
All Exhibit 1

EXHIBIT 1

PROJECT ALTERNATIVES
PRELIMINARY PRACTICALITY DETERMINATION

Alternative 2: Lower Quarry Watershed Reduced Mining Footprint

Under Alternative 2, Phase 10 would not be mined to its full capacity while Phase 10P would be eliminated entirely. Phase 5 would continue to be mined at full capacity. Approximately 5.4 million tons less gypsum would be mined than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 2.81 years compared with the proposed project. Under this alternative, permanent impacts to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed project to 117.62 acres, resulting in a 16.01-acre decrease in impacts to waters of the United States. The need for a flood protection berm along the west perimeter of Phase 10P would be eliminated. Eliminating Phase 10P would eliminate its direct impacts on the arroyo wash and would avoid the downstream impacts on Fish Creek.

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 2 is constructible and would not present substantial logistical issues. It can be implemented without exposing mining personnel to human health and safety risks while following a balanced mining approach. However, it fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 5.4 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 2 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 3: Lower Quarry Watershed Reduced Mining Footprint

Alternative 3 proposes to reconfigure the mining footprint along the western boundaries of Phases 4 and 5 where Annex Mill Site No. 4 encroaches into the ephemeral wash to reduce impacts to waters of the United States. The mining boundaries of Phases 4 and 5 were selected for reconfiguration because of their close proximity to existing administrative/office facilities, where blasting is not ideal on account of the noise, and the depth of overburden needing to be stripped in order to access and extract the gypsum ore. Approximately 11.87 million tons less ore would be mined under this alternative than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 6.18 years compared to the proposed project. Under this alternative, permanent impacts *to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed project to 125.43 acres, resulting in an 8.20-acre reduction.*

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 3 is constructible and would not present substantial logistical issues. However, it fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 11.87 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 3 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 4: Middle Quarry Watershed Phase Elimination

Under Alternative 4, Phases 2P, 3P (North) and 3P (South) would be eliminated from the proposed mining plan, resulting in a reduction in impacts to waters of the United States from 133.63 acres under the proposed Project to 126.78 acres. This equates to a 6.85-acre reduction in impacts compared to the proposed Project. Approximately 2.33 million tons less gypsum would be mined under this alternative than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 1.21 years compared with the proposed project. While there would be a reduction in impacts to waters of the United States under this alternative, the removal of these three phases would realign the proposed stormwater berm such that it would be nearly perpendicular to flow in the main channel along three significant sections where the phases are proposed for removal (from approximately 300 to 1,300 feet long). The shift in berm orientation along these three sections would likely lead to increased scouring potential and would require additional engineering to prevent failure (e.g., berm would need to be anchored to a wider berm footing set deeper in the channel).

Based on the evaluation of logistics and constructability criteria and environmental impacts, while Alternative 4 is constructible it suffers from logistical issues in that eliminating phases from the middle watershed will disrupt the balanced mining approach and sequencing critical to cost and time efficient gypsum ore extraction. Additionally, from an environmental impacts perspective, impacts to waters of the United States are equal to or greater than the proposed project because the waters proposed for preservation under this alternative would incur greater indirect impacts due to a severing of hydrology. Further, Alternative 4 fails to meet the overall Project purpose, because the loss of 2.33 million tons of gypsum would adversely affect USG's ability to reliably supply gypsum products at levels consistent with current and projected demand. Therefore, Alternative 4 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 5: Upper Quarry Watershed Reduced Mining Footprint

Alternative 5 represents a reduced project alternative focusing exclusively on Phases 7 and 8 in the upper Quarry watershed. Under Alternative 5, the mining boundaries of Phases 7 and 8 would be reconfigured to reduce impacts to waters of the United States. Initially, the elimination of mining Phases 9, 8, 7, and 6 was considered but was determined to be infeasible for the following reasons: (1) Phases 8 and 9 are at the southernmost terminus of the upper Quarry watershed where the channels are deeply incised and a substantive reduction in impacts to waters of the United States is not anticipated, and (2) the potential elimination of either Phase 6 or 7 was considered but, similar to issues in the middle Quarry watershed, the elimination of either of these phases would result in an increase in indirect effects to waters of the United States and a loss of functions and services resulting from the isolation and fragmentation of these resources.

Under Alternative 5, the mining boundaries of Phases 7 and 8 would be moved east into the proposed quarry operations and would align parallel with the existing drainage. Impacts to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed Project to 122.35 acres, resulting in an 11.28-acre reduction in impacts to waters of the United States. The overall mining footprint would also be reduced by 34 acres, thereby decreasing potential mining beneath the valley alluvium where gypsum ore has determined to be most prevalent. Approximately 13.04 million tons less gypsum would be mined under this alternative than under the Proposed Action. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 6.79 years compared to the proposed project.

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 5 is constructible and would not present substantial logistical issues. Further, this alternative would incur the greatest reduction in impacts to waters of the United States compared to the proposed project. However, despite reporting lesser environmental impacts, Alternative 5 fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 13.04 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 5 was not selected to be the Least Environmentally Damaging Practicable Alternative.

EXHIBIT 2

APPROVED JURISDICTIONAL DETERMINATION

[See Attached]

5a-19
All Exhibit 2

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
5900 LA PLACE COURT
CARLSBAD, CALIFORNIA 92008

February 8, 2021

SUBJECT: Approved Jurisdictional Determination

Luis Carrazco
United States Gypsum
3810 West Evan Hewes Highway
Imperial, California 92251

Dear Mr. Carrazco:

I am responding to your request (File No. SPL-2014-00216-SAS) received November 17, 2020, for an approved jurisdictional determination (AJD) for the U.S. Gypsum Company Plaster City Quarry Expansion project site (lat 38.00388°N, long -116.07249 °W) located near the town of Ocotillo Wells, Imperial County, California

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, a permit would likely be required. The first test determines whether or not the proposed project is located within the Corps' geographic jurisdiction (i.e., it is within a water of the United States). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. This evaluation pertains only to geographic jurisdiction.

Based on available information, I have determined that waters of the United States do not occur on the review area identified in the enclosed delineation map titled "United States Gypsum Quarry Expansion Aquatic Resource Delineation". The basis for our determination can be found in the enclosed Approved Jurisdictional Determination (JD) form.

This letter includes an approved jurisdictional determination for the U.S. Gypsum Company Plaster City Quarry Expansion project site. If you wish to submit new information regarding this jurisdictional determination, please do so within 60 days. We will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. If you object to this or any revised or reissued jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) and Request for Appeal (RFA) form. If you wish to appeal this decision, you must submit a completed RFA form within 60 days of the date on the NAP to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDO
450 Golden Gate Ave.
San Francisco, CA 94102

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5 (see below), and that it has been received by the Division Office by **April 8, 2021**.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request, and is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Thank you for participating in the regulatory program. If you have any questions, please contact me at (760) 602-4834 or via e-mail at Kyle.J.Dahl@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Kyle J. Dahl
Chief
San Diego and Imperial Counties Section

Enclosure(s)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: United States Gypsum Company, Luis Carrazco	File Number: SPL-2014-00216-SAS	Date: FEBRUARY 8, 2021

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

  APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
Kyle Dahl
U.S. Army Corps of Engineers
Los Angeles District

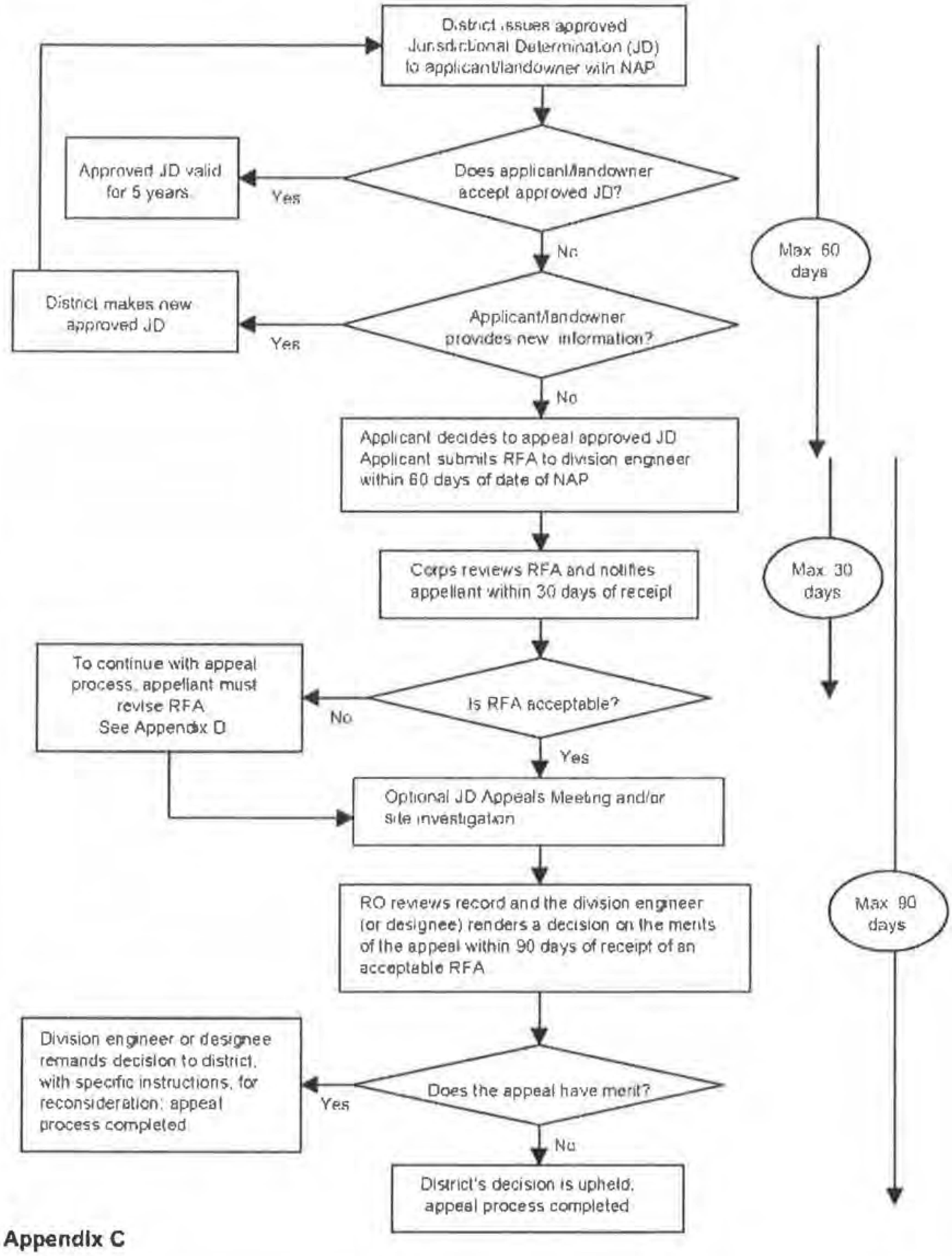
Phone: (760) 602-4834
Email: Kyle.J.Dahl@usace.army.mil

If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
450 Golden Gate Ave.
San Francisco, CA 94102
Phone: (415) 503-6574 Fax: (415) 503-6646
Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

§ 331.5 Criteria.

(a) *Criteria for appeal* —(1) *Submission of RFA.* The appellant must submit a completed RFA (as defined at §331.2) to the appropriate division office in order to appeal an approved JD, a permit denial, or a declined permit. An individual permit that has been signed by the applicant, and subsequently unilaterally modified by the district engineer pursuant to 33 CFR 325.7, may be appealed under this process, provided that the applicant has not started work in waters of the United States authorized by the permit. The RFA must be received by the division engineer within 60 days of the date of the NAP.

(2) *Reasons for appeal.* The reason(s) for requesting an appeal of an approved JD, a permit denial, or a declined permit must be specifically stated in the RFA and must be more than a simple request for appeal because the affected party did not like the approved JD, permit decision, or the permit conditions. Examples of reasons for appeals include, but are not limited to, the following: A procedural error; an incorrect application of law, regulation or officially promulgated policy; omission of material fact; incorrect application of the current regulatory criteria and associated guidance for identifying and delineating wetlands; incorrect application of the Section 404(b)(1) Guidelines (see 40 CFR Part 230); or use of incorrect data. The reasons for appealing a permit denial or a declined permit may include jurisdiction issues, whether or not a previous approved JD was appealed.

(b) *Actions not appealable.* An action or decision is not subject to an administrative appeal under this part if it falls into one or more of the following categories:

(1) An individual permit decision (including a letter of permission or a standard permit with special conditions), where the permit has been accepted and signed by the permittee. By signing the permit, the applicant waives all rights to appeal the terms and conditions of the permit, unless the authorized work has not started in waters of the United States and that issued permit is subsequently modified by the district engineer pursuant to 33 CFR 325.7;

(2) Any site-specific matter that has been the subject of a final decision of the Federal courts;

(3) A final Corps decision that has resulted from additional analysis and evaluation, as directed by a final appeal decision;

(4) A permit denial without prejudice or a declined permit, where the controlling factor cannot be changed by the Corps decision maker (e.g., the requirements of a binding statute, regulation, state Section 401 water quality certification, state coastal zone management disapproval, etc. (See 33 CFR 320.4(j));

(5) A permit denial case where the applicant has subsequently modified the proposed project, because this would constitute an amended application that would require a new public interest review, rather than an appeal of the existing record and decision;

(6) Any request for the appeal of an approved JD, a denied permit, or a declined permit where the RFA has not been received by the division engineer within 60 days of the date of the NAP;

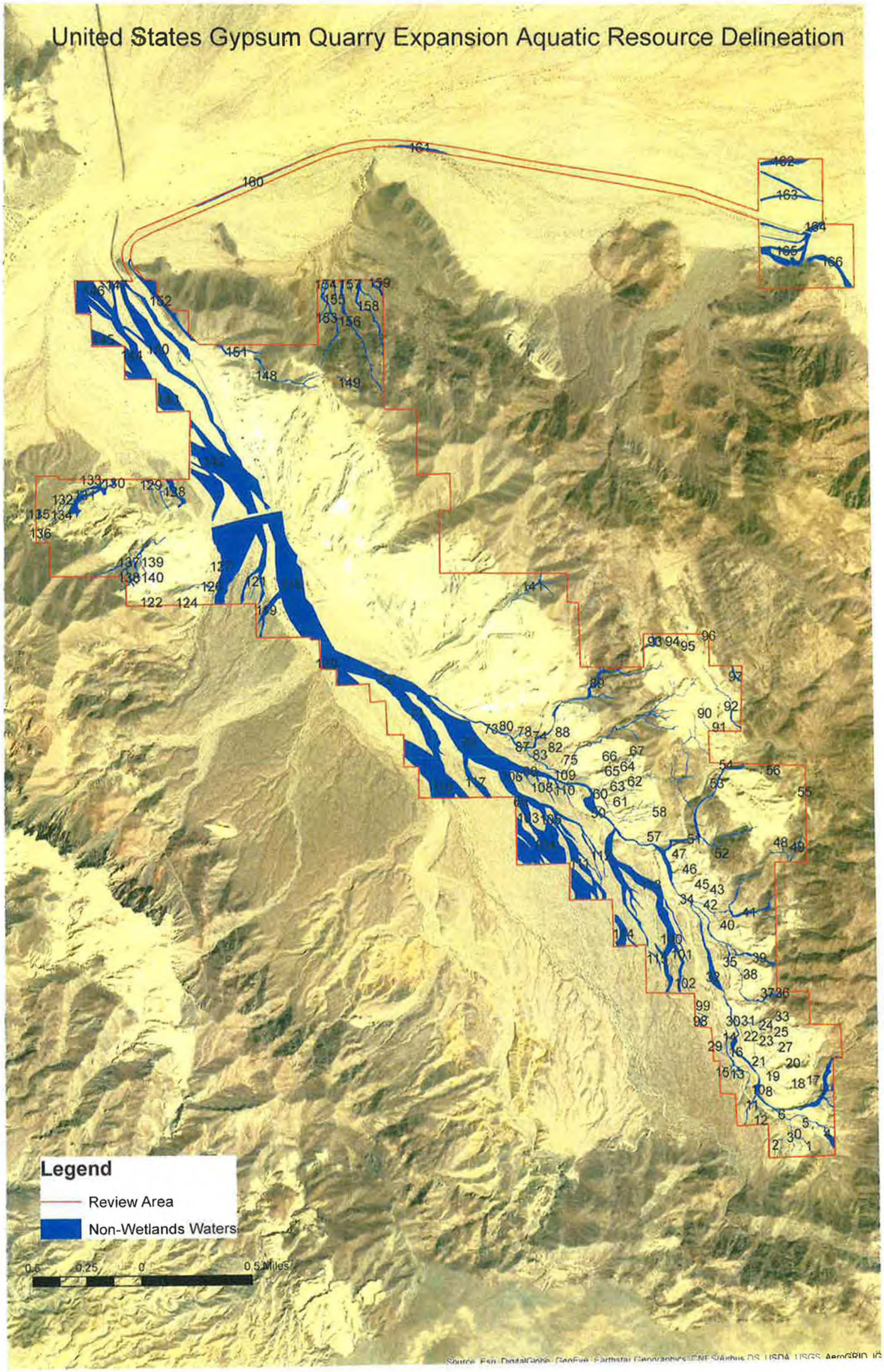
(7) A previously approved JD that has been superceded by another approved JD based on new information or data submitted by the applicant. The new approved JD is an appealable action;

(8) An approved JD associated with an individual permit where the permit has been accepted and signed by the permittee;

(9) A preliminary JD; or

(10) A JD associated with unauthorized activities except as provided in §331.11.

United States Gypsum Quarry Expansion Aquatic Resource Delineation



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IG

EXHIBIT 3

2022 JURISDICTIONAL AQUATIC RESOURCES DELINEATION FOR THE OLD KANE SPRING ROAD SITE

[See Attached]

5a-20
All Exhibit 3

DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

MEMORANDUM

To:	John Bowsher, Quarry Manager
From:	Cody Schaaf, Biologist
Subject:	Initial Jurisdictional Aquatic Resources Delineation Findings, Old Kane Springs Road Mitigation Site, San Diego County, California
Date:	April 22, 2022
Attachment(s):	Figures Attachment A, Site Photos Attachment B, Data Forms Attachment C, Plant List Attachment D, Wildlife List

1 Introduction

This memorandum provides the initial findings of a formal jurisdictional aquatic resources delineation of state waters on the proposed Old Kane Springs Road Mitigation (Mitigation) site in eastern San Diego County, California. The delineation defined aquatic resources potentially under the jurisdiction of California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB). No wetlands or waters under the jurisdiction of the US Army Corps of Engineers (USACE) exist on the site. The results of this delineation are preliminary until verified by CDFW and RWQCB.

Attachment A shows photos of representative aquatic features and indicators observed on the site. All data forms collected on the site can be found in Attachment B.

Project Location

The proposed Mitigation site is generally located southwest of the community of Ocotillo Wells, California, south of Highway 78 and west of Split Mountain Road. The approximately 120-acre site spans privately owned desert open space along Old Kane Springs Road in the far eastern portion of San Diego County, California (Figure 1, Project Location). The approximate center of the Mitigation site is 33.122841° N and -116.179786° W (decimal degrees).

2 Regulatory Setting

California Department of Fish and Wildlife

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or other aquatic wildlife.

In Title 14 of the California Code of Regulations, Section 1.72, CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

In Title 14 of the California Code of Regulations, Section 1.56, CDFW defines "lake" to include "natural lakes or man-made reservoirs." Diversion, obstruction, or change to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by entering into an agreement pursuant to Section 1602 of the Fish and Game Code.

California Regional Water Quality Control Board

The State Water Resources Control Board has authority over wetlands through Section 401 of the Clean Water Act (CWA) and the Porter–Cologne Water Quality Control Act, as well as California Code of Regulations Section 3831(k) and California Wetlands Conservation Policy. The CWA was established to create a regulatory permitting program designed to address the discharge of pollutants into "waters of the United States," which includes surface waters and water bodies as defined by U.S. Environmental Protection Agency regulations (e.g., 40 CFR Section 122.2). All "waters of the United States" in California are also "waters of the state" (defined by the Porter-Cologne Water Quality Control Act as "any surface water or ground water, including saline waters, within the boundaries of the state." [Water Code Section 13050(e)]). However, not all waters of the state (e.g., ground water) are waters of the United States.

Clean Water Act – Section 401

The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the State Water Resources Control Board to the nine regional boards. The Central Valley RWQCB (Region 5) has authority for Section 401 compliance in the project area. A request for certification is submitted to the regional board at the same time that an application is filed with the USACE. If a CWA Section 404 permit is not required for the project, the RWQCB may still require a permit (i.e., Waste Discharge Requirement) for impacts to waters of the state under the Porter-Cologne Act (described below).

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act established the State Water Resources Control Board and each RWQCB as the principal state agencies responsible for the protection of water quality in California. The Porter–Cologne Water Quality Control Act provides that "All discharges of waste into the waters of the State are privileges, not rights." Waters of the state are defined in Section 13050(e) of the Porter–Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter–Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The Central Valley RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction.

3 Methods

Desktop Review

Prior to conducting fieldwork, Dudek conducted a review of hydrology, soils and all previously mapped wetland, riverine, and riparian features associated with the Mitigation site. This included extensive desktop review of the survey area, historical land use, local and regional climactic data, and aerial photography (including historical aerials) with topographic configurations and vegetative signatures. These signatures may suggest the potential or presence of potentially jurisdictional waters at the time of the field survey. This information was evaluated by consulting the following available sources:

- 7.5-minute Harper Canyon and Borrego Mountain quadrangle maps (and surrounding quads) (USGS 2018)
- Historical aerials (Google Earth 2021)
- The web-based U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapper (USFWS 2021)
- The National Hydrography Dataset (USGS 2021)
- UC Davis/NRCS SoilWeb (UC Davis/NRCS 2021)
- The latest state and federal regulatory definitions, guidance documents, and delineation manuals for state and federally regulated waters (including wetlands)

Field Delineation Methods

Dudek biologists Callie Amoaku, Cody Schaaf, Erin Bergman and Charles Adams conducted the delineation of the Mitigation site in September 2021 (Table 1). Photos (see Attachment A) and various data sheets were collected during the delineation (see Attachment B).

Table 1. Jurisdictional Delineation Schedule

Date	Personnel	Conditions
09/01/2021	Callie Amoaku, Cody Schaaf, Erin Bergman, Charles Adams	79-97°F, 0-60% cloud cover (cc), 0–3 mile-per-hour (mph) winds

The site was evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of any potential aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity. To assist in the mapping of non-wetland waters, data was collected using the USACE's *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008). Dudek also utilized the *Episodic Stream Indicator Data Sheet* of the California Energy

Commission (CEC) document *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (CEC 2014) to document several of the features within the study area. These data sheets can be found in Attachment B.

Since no hydrophytic vegetation and/or associated wetlands were present on the site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel.

Non-wetland waters were delineated using a Trimble R1 GNSS Receiver with Esri Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the top of bank of each feature. OHWM data forms describing channel attributes across the site are included in Attachment B.

Dudek also mapped vegetation communities and land covers on the site during the delineation. Mapping was in accordance with the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) or the *Draft Vegetation Communities of San Diego County* (Oberbauer et al. 2008). Community classifications were selected based on site factors, descriptions, distribution, and characteristic species present within an area. Visible disturbance factors were also be noted during vegetation mapping.

Dudek extensively documented site attributes, including OHWM indicators and vegetation communities, through photos. Attachment A shows photos of representative aquatic features and indicators observed on the site.

Post-Field Desktop Review and Hydrologic Modeling Methods

Desert landscapes often produce problematic OHWM indicators that can be inconsistent (over space and time) and difficult to delineate in the field (USACE 2008). To analyze and further test the initial results of the field delineation, Dudek conducted a hydrologic modeling exercise to ensure that the fluvial indicators observed in the field matched a simulated flow event across the site.

The methods used in the modeling are described in the San Diego County Hydrology Manual (2003). The National Resources Conservation Service (NRCS) hydrologic method, which is outlined in Section 4 of the Hydrology Manual, was used to develop the rainfall-runoff relationship. Hydraulic Engineering Center Hydrologic Modeling System (HEC-HMS) software developed by the U.S. Army Corps of Engineers (USACE) was used to model the precipitation-runoff process of the watershed's contributing flow to the site. Contributing watersheds were delineated using available topographic information and StreamStats, a web-based Geographic Information System (GIS) application developed by the USGS that provides analytical tools for water-resources planning and design purposes. HEC-HMS was utilized to calculate peak discharges for a 25-year rainfall event with a storm duration of 24-hours. Hydraulic Engineering Center River Analysis System (HEC-RAS) software was used to model the 25-year, 24-hour flood inundation areas, depths, and flow velocities at the site. Two-dimensional unsteady-flow modeling was performed to generate maximum flow areas, depths, and velocities. A flow area computational mesh was generated using a 1-meter Digital Elevation Model terrain map from 2016 downloaded from USGS. This flow area mesh was overlaid with the initial field delineation results to display the full potential extent of jurisdictional non-wetland waters on the site.

4 Results – Initial Findings

Soils

Federal and state soil mapping typically used to obtain data on soils underlaying the site is not available within the boundaries of the Mitigation site (UC Davis/NRCS 2021). Soil series mapped immediately adjacent to the east of the site include Carrizo very gravelly sand, sloping gullied land, riverwash and Rositas loamy coarse sand (UC Davis/NRCS 2021). Carrizo very gravelly sand, riverwash and sloping gullied land are ranked as hydric soils by the Natural Resources Conservation Service (NRCS 2021).

Vegetation

Vegetation mapping performed by Dudek during the delineation indicated that two desert vegetation communities occur on the site: desert dry wash woodland and Sonoran mixed woody scrub. These communities are briefly described below. Their acreages on the site are presented in Table 2 below; Figure 2 displays these communities as they occur on the site.

Table 2. Vegetation Communities

Vegetation Communities	Acreage
Desert Dry Wash Woodland	69.08
Sonoran Mixed Woody Scrub	50.55
Total	**119.63**

Desert Dry Wash Woodland is described by Obebauer et al. (2008) as an open to dense, drought-deciduous riparian scrub woodland 30-60 feet tall that is typically dominated by ironwood (*Olneya tesota*), desert willow (*Chilopsis linearis*) or blue palo verde (*Parkinsonia florida*). It occurs in sandy, gravelly washes and arroyos of the lower Mojave and Colorado deserts. These washes typically have braided channels that are substantially rearranged with every surface flow event. On site, this community is dominated by ironwood and occupies the main alluvial fan/wash in the center of the site. Scattered creosote bush (*Larrea tridentata*) shrubs occur within this community, along with white bursage (*Ambrosia dumosa*).

Sonoran Mixed Woody Scrub is described by Obebauer et al. (2008) as a Colorado desert community with mixed woody species occurring on well-drained slopes and alluvial fans, usually at the base of mountains. The three most characteristic species of this community also dominate this vegetation community on site: creosote bush, white bursage and ocotillo (*Foquieria splendens*). This community occurs outside of the well-defined alluvial fans/drainages on the site.

Comprehensive lists of the plant and wildlife species observed on the site within these habitats during the vegetation mapping and jurisdictional delineation are included in Attachments C and D.

[illegible]

Three watersheds totaling 20.4 square miles were determined to contribute flow to the site. Figure 3, Watershed Map, displays the watersheds directly contributing flow to the site which were utilized in the hydrologic modeling exercise. The USFWS NWI Mapper (USFWS 2021) shows a series of 4 small riverine features flowing east to west through a well-defined alluvial fan in the central portion of the site; this was confirmed during the site visit, where many low flow channels were observed moving through the main wash in the center of the site. Additional minor channels were braided through additional floodplain and limited upland areas outside of the main wash.

According to USFWS NWI mapping (USFWS 2021), riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately 4 miles east of the site; at this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers is unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.1 Non-Wetland Waters

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels and swales within the desert dry wash woodland and Sonoran mixed woody scrub vegetation communities; one large non-wetland water was mapped to include all active low-flow channels within their larger floodplain area that exhibits low topographic variability between active flow channels and floodplain terraces. The central floodplain/wash on the site was very well defined with cut banks and strong fluvial indicators within and between low-flow channels. The northern and southern floodplains were a mosaic of floodplain terraces containing numerous unvegetated low-flow channels within a floodplain of low topographic variability with minor and often inconsistent fluvial indicators.

Additionally, a few smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub outside of larger floodplains were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features in the study area deemed to be potentially jurisdictional, confirmed through both the field delineation and associated hydrologic modeling, are displayed in Figure 4, Aquatic Resources Map.

In general, nearly all the field-mapped non-wetland water and low-flow channel boundaries (mapped based on evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks) fell within the maximum flow areas generated through the hydrologic model. The northern and southernmost portions of the site, outside of the central wash, showed more inconsistent and less-pronounced fluvial and OHWM indicators in the field; hydrologic modeling was used to refine the extent of non-wetland water boundaries within the Mitigation site. Figure 4 displays the boundaries of hydrologically modeled and field-verified non-wetland waters on the site and likely corresponds to accurate surface flow areas across the site during a significant runoff event.

Non-wetland waters on the site are ephemeral, meaning they only flow during storm events. These features are likely regulated by RWQCB and CDFW as waters of the state.

4.2 Swales

Several potential swale features without well-defined banks may present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may or may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but typically fell within the main floodplains of the mapped extent of non-wetland waters (Figure 3). Representative photos of these potential swale features within the larger floodplains are provided in Attachment A.

4.3 Potential Jurisdictional Aquatic Resources Summary

Table 3 below summarizes the results of the jurisdictional delineation and the areas of potential jurisdictional aquatic resources observed and mapped on the Project site.

Table 3. Potential Jurisdictional Aquatic Resources

Type	Jurisdiction	Acres/Linear Feet
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQCB	88.5/13,950
Total Potential Jurisdictional Aquatic Resources		**88.5/13,950**

5 Summary

The site supports 88.5 acres (13,950 linear feet) of non-wetland waters of the state in the form of an expansive desert wash and several isolated channels braided through the surrounding upland habitats. These non-wetland waters likely fall under the jurisdiction of CDFW and RWQCB given the well-defined fluvial indicators they display. The results of this delineation are preliminary until verified by CDFW and RWQCB.

6 References

CEC (California Energy Commission). 2014. *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants*. Prepared by California State University, Fresno, and the California Department of Fish and Wildlife. February 2014.

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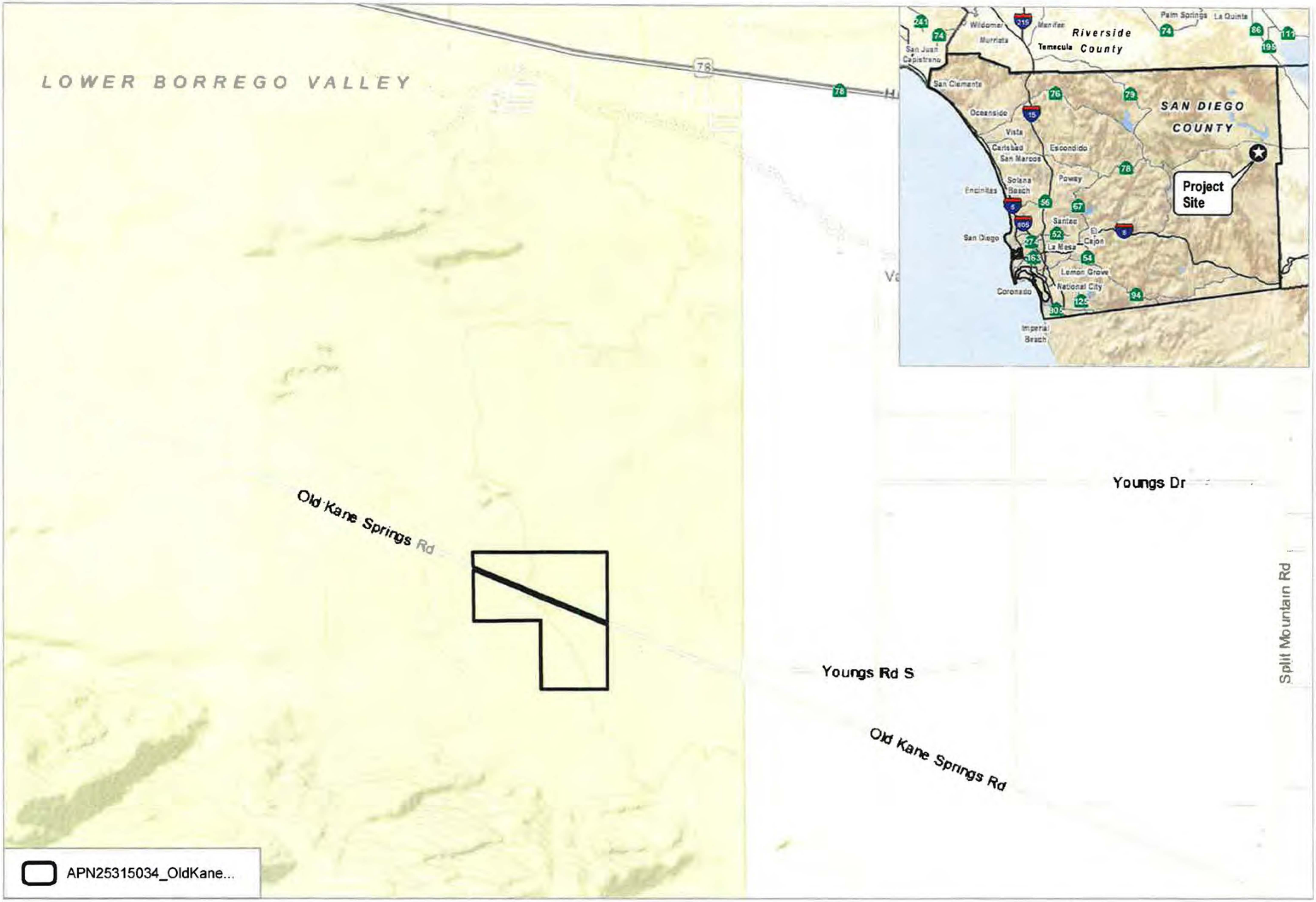

SOURCE: USGS 7.5-Minute Series Harper Canyon Quadrangle

DUDEK

0 1,250 2,500 Feet

FIGURE 1

Project Location

Initial Jurisdictional Aquatic Resources Delineation Findings for Old Kane Springs Road Mitigation Site

DUDEK

FIGURE 2

Vegetation Map

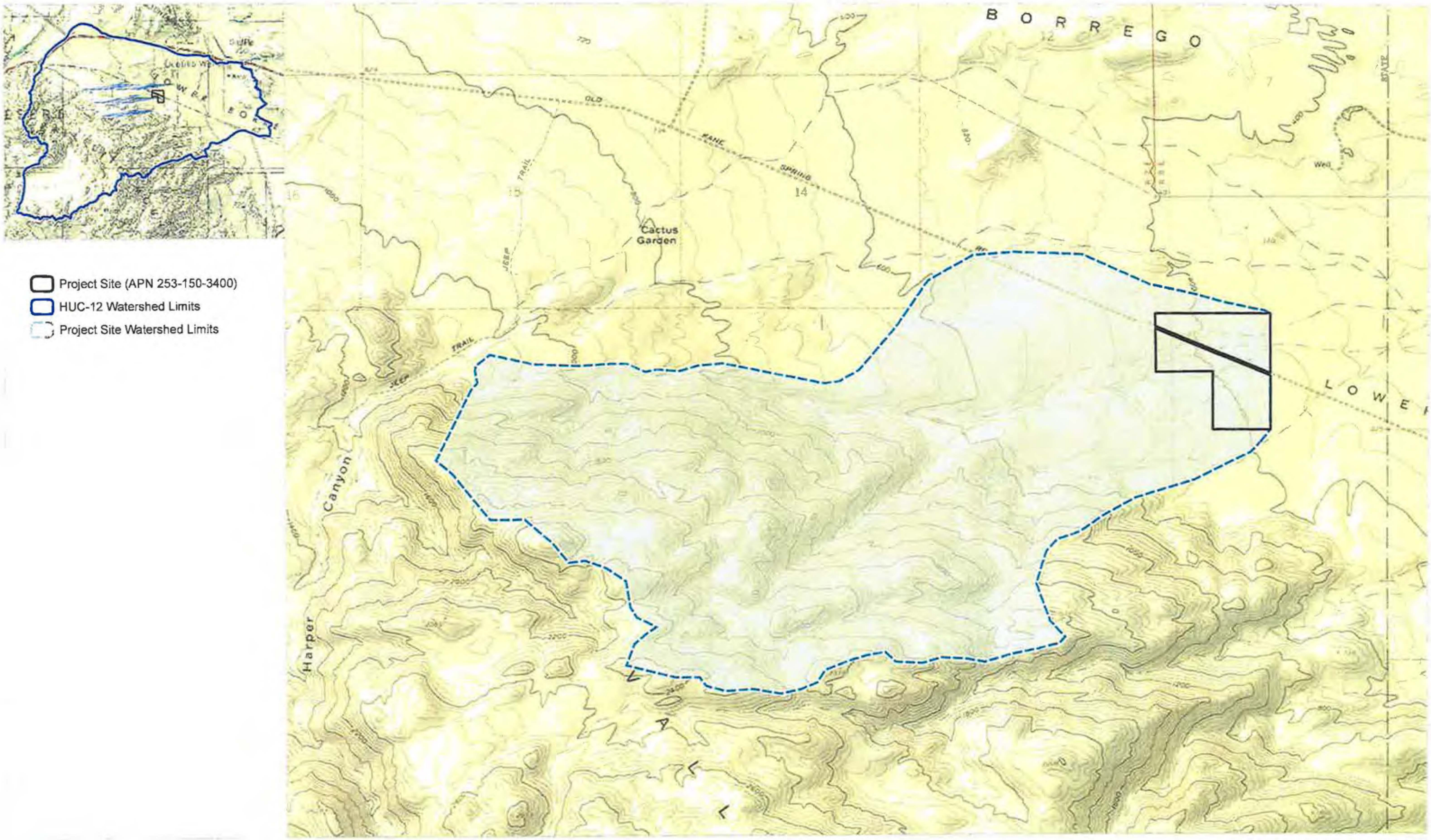

FIGURE 3

Watershed Map

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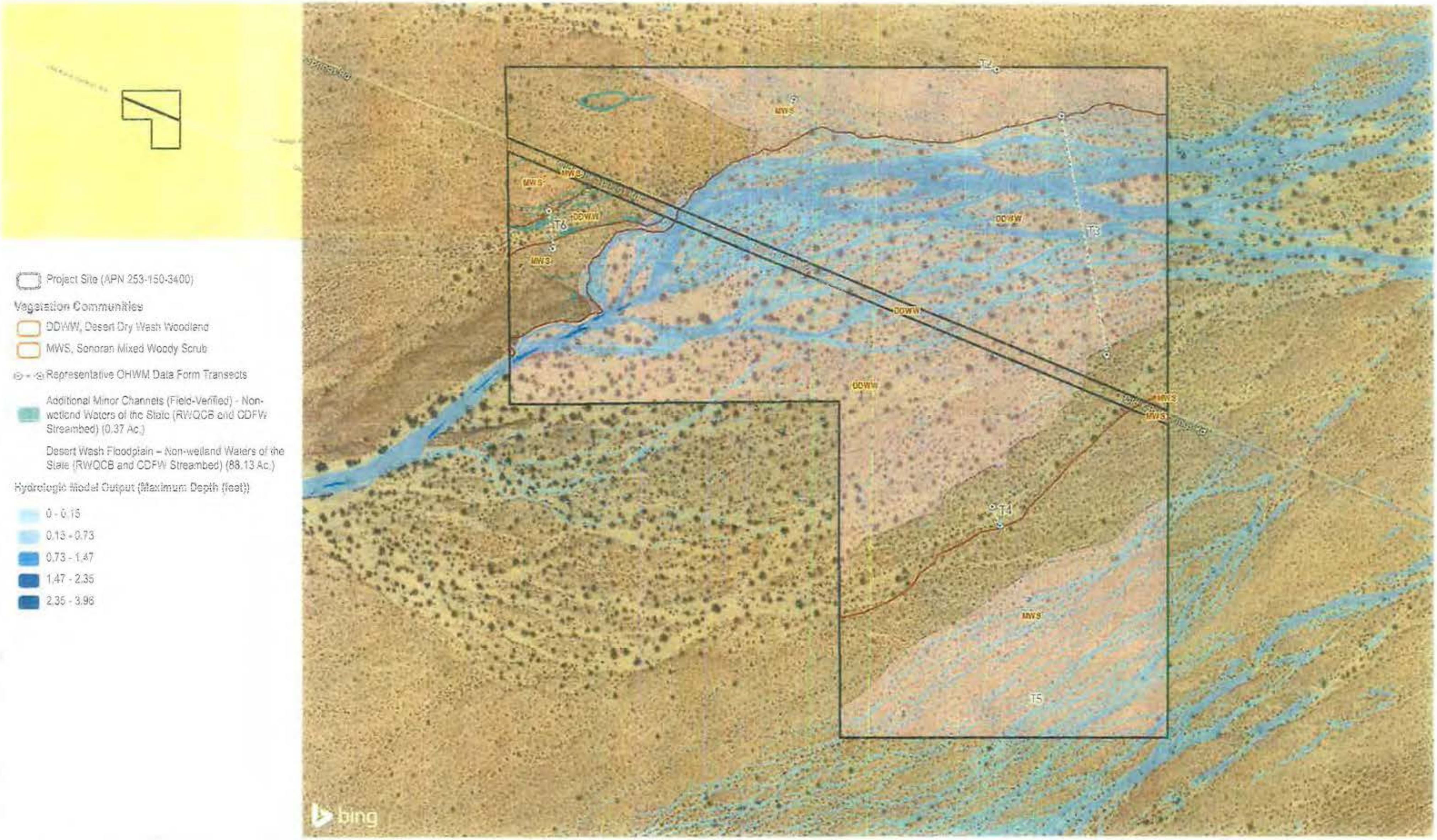


FIGURE 4

Aquatic Resources Map

DUDEK

Attachment A

Site Photos

Photo 1: Representative photo showing minor low-flow channels braided throughout desert vegetation the northern portion of the site. This area is considered a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

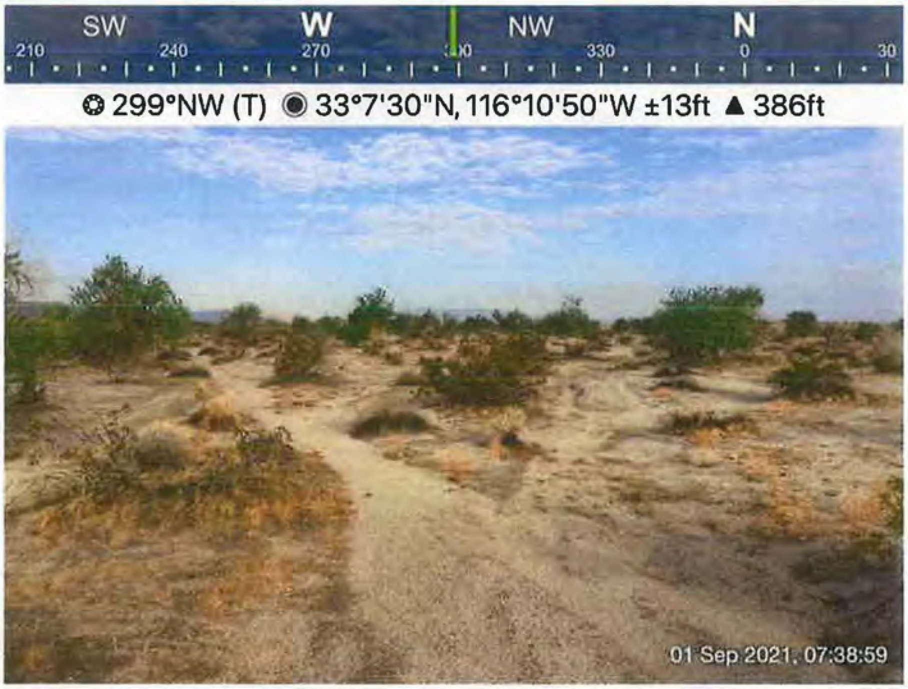


Photo 2: Additional minor channels braided throughout the northern portion of the site. This area is considered a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

Photo 3: The northern edge of the central wash is shown here with clear cut banks. Minor channels from the northern floodplain are shown in the right side of the photo entering the central wash.

Photo 4: The southern boundary of the central wash is less well defined, but clear differences in the cover of creosote bush can be seen; to photo right and outside of the wash, much higher cover of creosote bush and cacti is observed.

Photo 5: The middle of the central wash is dominated by ironwood trees and contains many braided low flow channels with strong fluvial indicators. Ripples and flow patterns in the sand can be seen in this photo as well as exposed rocks at low flow channel edges.

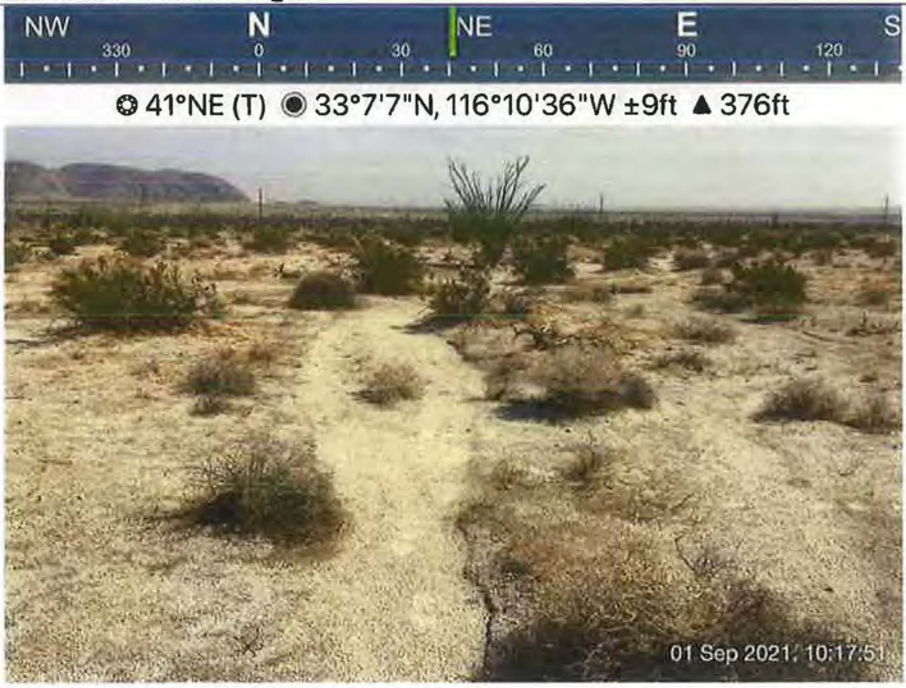


Photo 6: Minor channels with small cut banks and other fluvial indicators are present in certain areas of the southern portion of the site. Channels are braided together and considered to be a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

Photo 7: Looking across Transect 1 (T1) where an OHWM form was taken across a potential swale/weakly defined low-flow channel feature within the larger desert wash floodplain in the northern portion of the site.

Photo 8: Looking across Transect 2 (T2) where an OHWM form was taken across a low-flow channel feature with small but defined banks within the larger desert wash floodplain in the northern portion of the site.

Photo 9: Looking across Transect 3 (T3) where an OHWM form was taken within the main desert wash/floodplain feature with many low-flow channels showing evidence of ripple marks in the sand, small cut banks and a much higher density of ironwood trees. The entire wash, including its many adjacent low-flow channels are considered one large non-wetland water.

Photo 10: Looking across Transect 4 (T4) where an OHWM form was taken across an unvegetated upland area showing no evidence of banks/indicators of flow despite the appearance of a drainage on aerial imagery.

Photo 11: Looking across Transect 5 (T5) where an OHWM form was taken across a low-flow channel feature with small but defined banks within the broader desert wash floodplain in the southern portion of the site.

Photo 12: Looking across Transect 6 (T6) where an *Episodic Stream Indicator Data Sheet* was taken across an desert area with several small, isolated non-wetland water features braided throughout the landscape.

Attachment B

Data Forms

T1

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd Mitigation Site **Date:** 9/1/21 **Time:** n/a
Project Number: 13581.04 **Town:** Ocotillo Wells **State:** CA
Stream: None - Potential Swale **Photo begin file#:** **Photo end file#:**
Investigator(s): Cody Schaat, Callie Amoaku

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Open space / desert off Old Kane Springs Rd.

Projection: **Datum:** WGS84
Coordinates: 33.125156, -116.180746

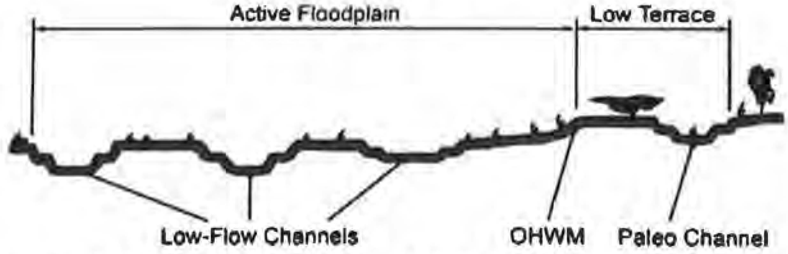
Potential anthropogenic influences on the channel system:
OHV, Shooting, and Recreation.

Brief site description: Upland desert habitat adjacent to large alluvial fan. Some potential swales throughout

Checklist of resources (if available):
☒ Aerial photography
Dates: 2021
☒ Topographic maps
☒ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☒ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph ☒ GPS
☐ Digitized on computer ☐ Other:

Project ID: 1358104 **Cross section ID:** T1 **Date:** 9/1/21 **Time:**

Cross section drawing:

OHWM

GPS point: T1

Indicators:

☒ Change in average sediment texture - minor change to lighter, finer grained sand
☐ Change in vegetation species
☒ Change in vegetation cover
↳ many upland areas also unvegetated
☐ Break in bank slope
☐ Other:
☐ Other:

Comments: minor change in sediment texture and less vegetated than adjacent areas with shrubs, Not strong indicators, potential swale.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace
Potential braided swale

GPS point:

Characteristics of the floodplain unit:
Average sediment texture: Course Sand to fine sand
Total veg cover: 35 % Tree: 5 % Shrub: 20 % Herb: 10 %
Community successional stage:
☐ NA
☐ Early (herbaceous & seedlings)
☒ Mid (herbaceous, shrubs, saplings)
☒ Late (herbaceous, shrubs, mature trees)

Indicators:
☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other:
☐ Other:
☐ Other:

Comments: Potential swale - very inconsistent and many less defined "braids" with similar features exist across the upland portions of the site

T2

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd mitigation
Project Number: 13581 04
Stream: Alluvial fan
Investigator(s): Cody Schaaf, Callie Amoaku

Date: 9/1/21 **Time:** n/a
Town: Ocotillo Wells **State:** CA
Photo begin file#: **Photo end file#:**

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Desert alluvial fan

Projection: **Datum:** WGS84
Coordinates: 33.125499, -116.178130

Potential anthropogenic influences on the channel system:

See T1

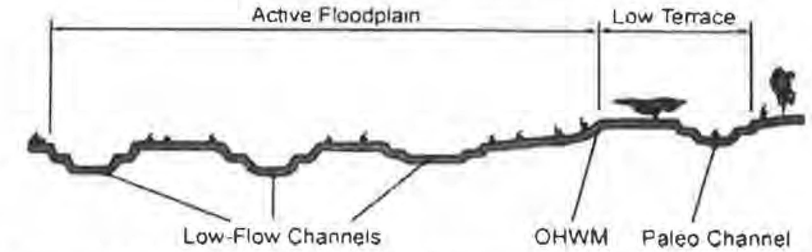
Brief site description: Minor channel in upland adjacent to wash

Checklist of resources (if available):

☑ Aerial photography
Dates: 2021
☑ Topographic maps
☑ Geologic maps
☑ Vegetation maps
☑ Soils maps
☑ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☑ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



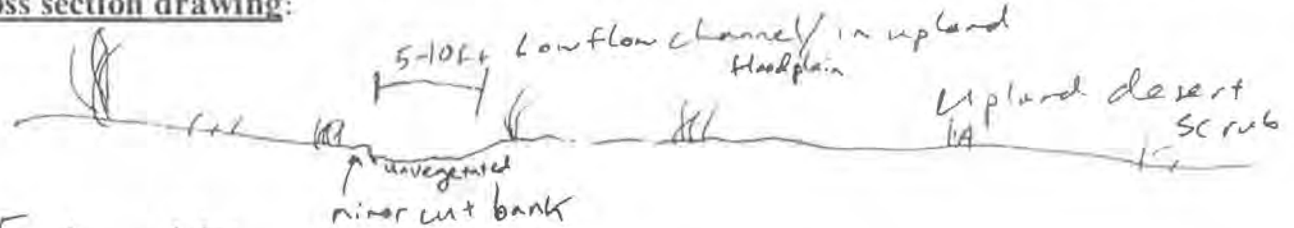
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph ☑ GPS
☐ Digitized on computer ☐ Other:

Project ID: 135581.04 **Cross section ID:** T2 **Date:** 9/1/21 **Time:**

Cross section drawing:



Facing SE

OHWM

GPS point: T2

Indicators:

☒ Change in average sediment texture
☐ Change in vegetation species
☒ Change in vegetation cover
☒ Break in bank slope
☐ Other:
☐ Other:

Comments: Finer, lighter sand in small channel, unvegetated, and small cut banks showing erosion

Floodplain unit: ☒ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

minor channel comprised of both Lowflow channel and floodplain

GPS point:

Characteristics of the floodplain unit:

Average sediment texture: Coarse - Fine sand
Total veg cover: 01 % Tree: % Shrub: % Herb: 1 % (in channel)
Community successional stage:

☐ NA
☒ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☒ Presence of bed and bank
☐ Benches
☐ Soil development
☒ Surface relief
☐ Other:
☐ Other:
☐ Other:

Comments: minor banks and clear sulface/ topographic relief.

T3

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd
Project Number: 13581.04
Stream: Alluvial Fan/Wash
Investigator(s): Cody Schaaf, Callie Amoaku

Date: 9/1/21
Town: Ocotillo Wells
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: In desert wash / alluvial Fan.

Projection:
Datum: WGS 84
Coordinates: 33.123663, -116.176950

Potential anthropogenic influences on the channel system:

See T 1

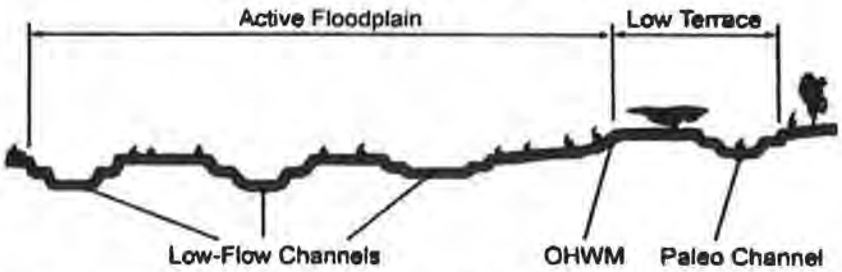
Brief site description: Transect taken across large, wide desert wash with Ironwood (Olneya sp.) dominating vegetation layer. many low flow channels within wash boundaries. Wash mapped bank to bank and according to presence of Ironwood.

Checklist of resources (if available):

☑ Aerial photography
Dates: 2021
☑ Topographic maps
☑ Geologic maps
☑ Vegetation maps
☑ Soils maps
☑ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☑ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



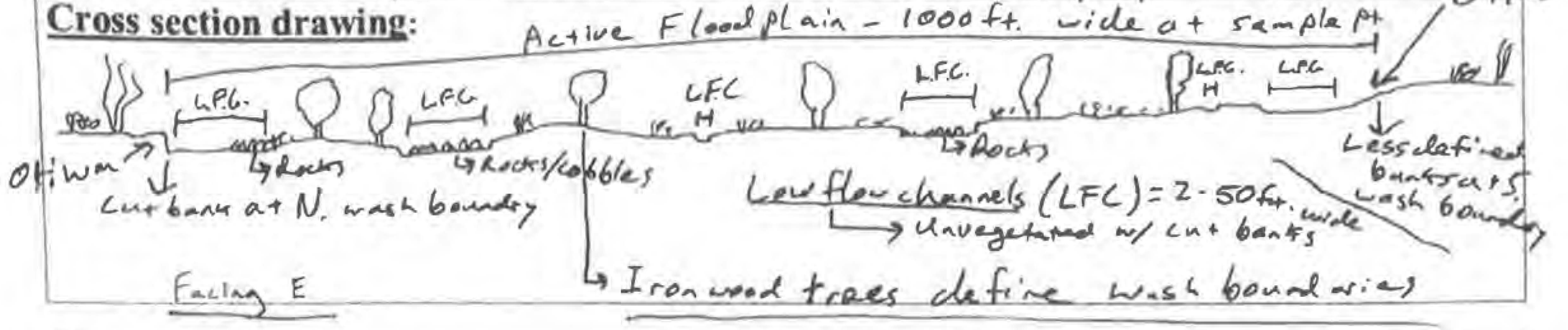
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☐ Digitized on computer
☑ GPS
☐ Other:

Project ID: 13581 04 **Cross section ID:** T3 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: see wash boundaries on map

Indicators:
☒ Change in average sediment texture
☒ Change in vegetation species
☐ Change in vegetation cover
☒ Break in bank slope
☐ Other:
☐ Other:

Comments: In wash, veg cover becomes dominated by Ironwood trees. Break in bank slope on N. side of wash well defined. Rocks and cobbles become much more common in and around low flow channels. Ironwoods on terraces within floodplain.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: Not mapped

Characteristics of the floodplain unit:
Average sediment texture: Very coarse sand w/ some cobbles
Total veg cover: 10 % Tree: ___ % Shrub: ___ % Herb: [illegible] %
Community successional stage:
☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:
☐ Mudcracks
☒ Ripples
☐ Drift and/or debris
☒ Presence of bed and bank
☐ Benches
☐ Soil development
☒ Surface relief
☒ Other: Cobbles exposed
☐ Other:
☐ Other:

Comments: Ripples, defined banks, areas of exposed cobbles and clear surface/topographic relief present in low flow channels.

Project ID: 13581 04 **Cross section ID:** T 3 **Date:** 9/1/21 **Time:**

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: T 3

Characteristics of the floodplain unit:

Average sediment texture: Very coarse Sand

Total veg cover: [redacted] 38 % Tree: [redacted] 10 % Shrub: [redacted] 15 % Herb: [redacted] 5 %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☒ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☒ Ripples
☐ Drift and/or debris
☒ Presence of bed and bank
☒ Benches
☐ Soil development
☒ Surface relief
☒ Other: Presence of Ironwood
☐ Other:
☐ Other:

Comments: Ripples, benches, banks, and ironwoods present and defining the wash floodplain.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point:

Characteristics of the floodplain unit:

Average sediment texture:

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other:
☐ Other:
☐ Other:

Comments:

T4

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd Mitigation **Date:** 9/1/21 **Time:** n/a
Project Number: 13581.04 **Town:** Ocotillo Wells **State:** CA
Stream: None **Photo begin file#:** **Photo end file#:**
Investigator(s): Cody Schaaf, Callie Anaaku

Y ☒ N ☐ Do normal circumstances exist on the site?

Y ☐ N ☒ Is the site significantly disturbed?

Location Details: Upland desert scrub adjacent to alluvial fan

Projection: **Datum:**
Coordinates: 33.120603, -116.178149

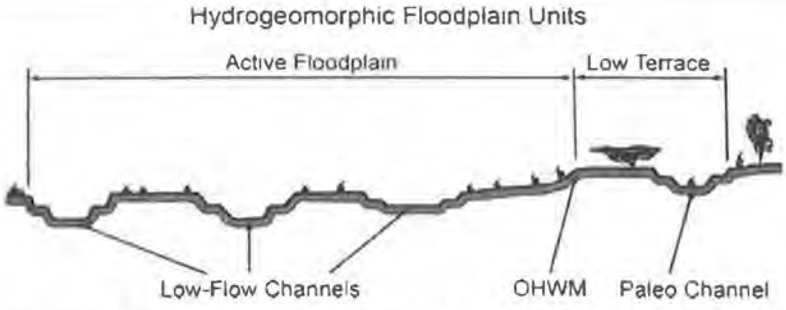
Potential anthropogenic influences on the channel system:
See T1. Road may exist through this transect

Brief site description: Bare ground adjacent to desert wash in upland scrub. Looks like part of wash on aerial imagery

Checklist of resources (if available):

☒ Aerial photography
Dates: 2021
☒ Topographic maps
☐ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☐ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event



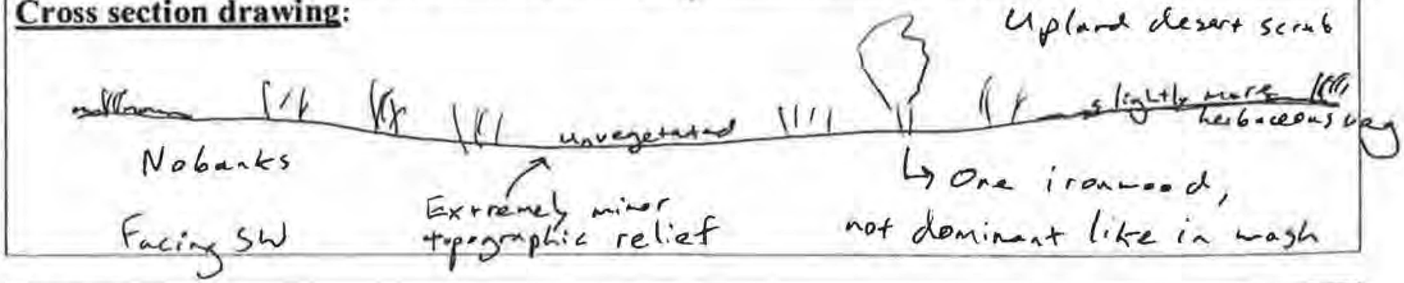
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph ☒ GPS
☐ Digitized on computer ☐ Other:

Project ID: 1358.04 **Cross section ID:** T4 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: None

Indicators:

☐ Change in average sediment texture → Sediment same as in upland here
☐ Change in vegetation species
☒ Change in vegetation cover – Not an OHWM
☐ Break in bank slope
☐ Other: ____
☐ Other: ____

Comments: Slightly connects to wash on aerial but this area only shows less vegetation cover on ground between shrubs. No clear sign of true fluvial indicators (i.e. banks). Only one or two ironwoods - not significant as adjacent wash.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: None

Characteristics of the floodplain unit:

Average sediment texture: ____
Total veg cover: ____% Tree: ____% Shrub: ____% Herb: ____%
Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: ____
☐ Other: ____
☐ Other: ____

Comments:

None. If anything, this is an overflow channel for wash that only sees flows in extreme rain events (ie. 100+ year flooding).

T5

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: [redacted] Old Kane Springs Rd
Date: 9/1/21
Time: n/a
Project Number: 13551.04
Town: Ocotillo Well,
State: CA
Stream: Alluvial fan
Photo begin file#:
Photo end file#:
Investigator(s): Cody Schaaf, Callie Amoaku

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: SE portion of site in upland desert scrub

Projection:
Datum:
Coordinates: 33.118566, -116.177727

Potential anthropogenic influences on the channel system:

See T1

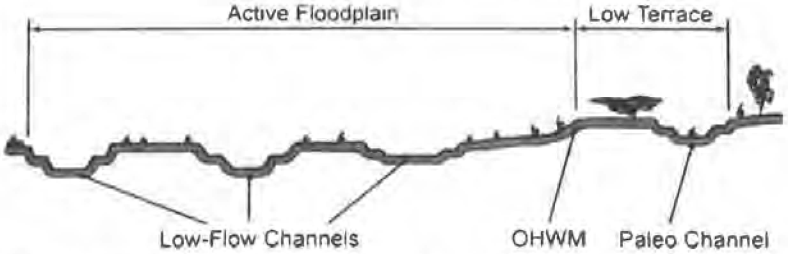
Brief site description: Small channel in upland desert scrub on SE portion of site. Similar to T2.

Checklist of resources (if available):

☑ Aerial photography
Dates: 2021
☑ Topographic maps
☑ Geologic maps
☑ Vegetation maps
☑ Soils maps
☑ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☑ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



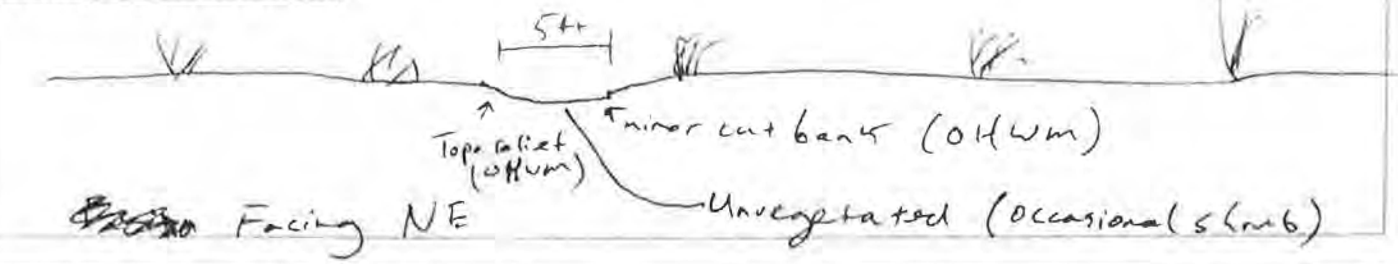
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☑ GPS
☐ Digitized on computer
☐ Other:

Project ID: 1358104 **Cross section ID:** T5 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: T5

Indicators:
- ☑ Change in average sediment texture
- ☐ Change in vegetation species
- ☑ Change in vegetation cover
- ☑ Break in bank slope
- ☐ Other:
- ☐ Other:

Comments: Minor but defined and consistent bank erosion, unvegetated channel bottom and finer sand.

Floodplain unit: ☑ Low-Flow Channel ☑ Active Floodplain ☐ Low Terrace

GPS point: See Map

Characteristics of the floodplain unit:
Average sediment texture: Fine to Coarse sand
Total veg cover: 5 % Tree: ___ % Shrub: 5 % Herb: ___ %
Community successional stage:
- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☑ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:
- ☐ Mudcracks
- ☐ Ripples
- (No) ■ Drift and/or debris
- ☑ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☑ Surface relief
- ☐ Other:
- ☐ Other:
- ☐ Other:

Comments: minor banks, topographic relief, and drainage patterns. Similar to T2 on NW end of site

Episodic Stream Indicator Data Sheet

page 1 of 4

Site ID: Old Kane Rd [redacted] Mitigation **Stream ID:** T6 - Upland **Date:** 9/1/21

Nearest Town: County:

Investigators: Cody Schaaf, Callie Amoaku

Base Map

Aerial Photo #:	Date:	Topographic Map Name: Borrego mtn / Harper Cyn	Date: 2018

GPS Data

GPS Name:	Datum: WGS84	Transect Elevation: 300 ft	Zone 10 / 11	GPS Error: ± 3 ft / m

GPS co-ords start of transect: 33.12378 -116.18341

GPS co-ords end of transect: 33.12348 -116.18383

Geomorphic Province (✓one) ☐ Mojave ☑ Sonoran/Colorado ☐ Great Basin Other:

Landform (✓ all that apply)

☐ Headwater ☐ Upper fan ☐ Middle fan ☐ Lower fan ☑ Alluvial plain ☐ Axial valley ☐ Playa

Channel Form (✓ one)

☐ Single thread ☑ Braided ☐ Compound ☐ Distributary ☐ Discontinuous Other:

Transect was selected to:

☑	Document fluvial activity & boundaries	☐	Document channel elevations & boundaries
☑	Document habitat associations	☐	Document a change in watercourse morphology
☐	Other:		

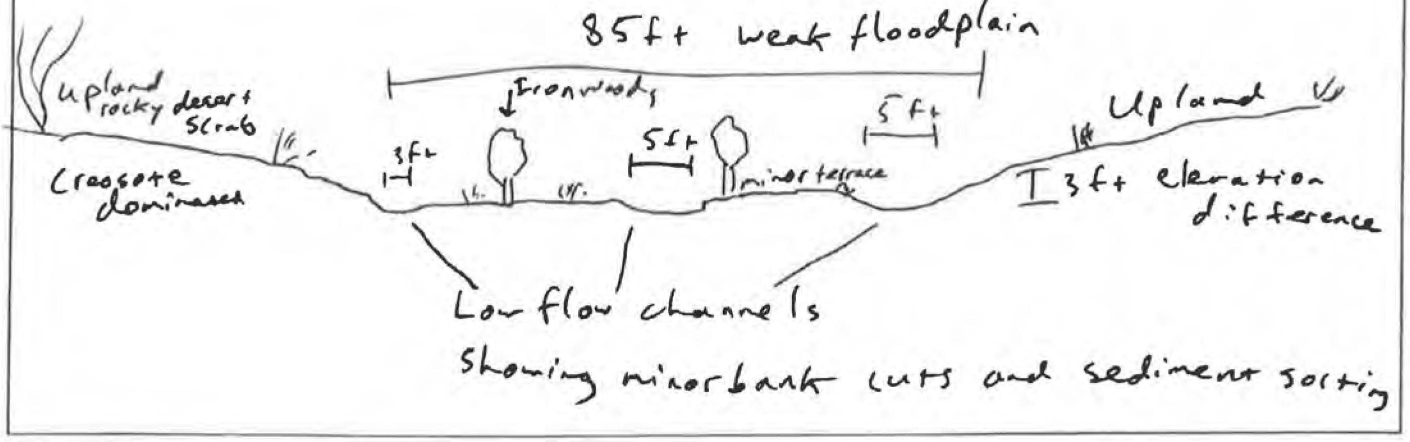
Date of most recent runoff event (if known): Yesterday, 8/31/21

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function: Alluvial area in desert scrub SW of Ocotillo Wells. Mountain valleys drain flows into gently sloping flats, creating many alluvial fans and washes. Uplands have minor topo. relief that appear to be relict (Not fluvially active) when compared to alluvial floodplains, low flow channels and active swales.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

N S

Left Right



Site ID: Old Kane Springs Rd.	Stream ID: T6	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				**Substrate Particle Size**		
	Av soil horizon	✓	Relict bars & swales		**Estimated percentages**	
	Biotic soil crusts		Rock fractured in place		% Bedrock / Cemented substrate	
	Bioturbation		Rock varnish		% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble	✓	Rock weathering	5	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	20	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	50	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	25	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place		% Silt/Clay	Fines
	Other:					

Creosote bush scrub with some very minor relict bars / swales but general surface rounding, woody debris in place, and Rock exposure suggesting weathering.
No active fluvial indicators present in uplands.

Fluvial Indicators ← None

	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
~~+~~	~~Cut banks (minor)~~		Organic drift	~~+~~	~~Vegetation-channel alignment~~
	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
~~+~~	~~Flow lineations~~	~~+~~	~~Sediment sorting~~		
	Other:				

~~minor cut banks and sediment sorting. Veg / channel alignment is strongest indicator – low flow channels unvegetated and floodplain dominated by ironwood.~~

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
25%	Creosote – 10% ~~[illegible]~~ Ocotillo – 5%	Creosote – 4ft tall, 6 wide ~~[illegible]~~ Ocotillo – 10ft tall, 4 wide

Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences): ~~5-10% more Creosote in upland and floodplain terraces compared to low flow channel. 3-5% more Ironwood in floodplain compared to upland~~ N/A N/A

Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):
N/A – No fluvially active units ~~Yes, Ocotillo only in uplands~~, N/A

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences)
N/A – No fluvially active units ~~Yes – Ocotillo and Creosote more upland~~ N/A

Site ID: Old Kane Springs Rd.	Stream ID: #6	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

	Transportation, Deposition & Flow Transition Indicators				**Substrate Particle Size**	
	Bar forms: sand / gravel		Secondary channels		Estimated percentages	
	Bifurcated flow		**Sediment plastering**		% Bedrock / Cemented substrate	
✓	Drainage swales		Sediment ramps: sand / gravel		% Boulder	≥ 256 mm
✓	**Flow lineations**		**Sediment sheets: sand / gravel**		% Cobble	≥ 64 – 256 mm
	Imbricated gravel	✓	Sediment sorting	10	% Pebble	≥ 4 – 64 mm
	Levee ridges: sand / gravel		**Sediment tails: sand / gravel**	40	% Granule	≥ 2 – 4 mm
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments	50	% Sand	≤ 2 mm
	Organic **drift**		**Wrack**		% Silt/Clay	Fines
	Overturned rocks		Wrinkle marks			
	Out-of-channel flow: **Lateral** floodplain / Terminal floodplain					
	Ripples					
	Other:					

Low flow channels are swale-like. Channel aligned w/ unvegetated areas. Floodplain shows minor sediment sorting in the form of transport of finer sands.

Erosion Indicators

✓	Cut banks (small)		Rills		Water-cut benches
	Exposed roots		Scour		**Water level mark**
	Headcuts		Secondary channels		
	Other:				

Small cut banks are main erosion indicator for low flow channels and boundaries of floodplain.

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
15 % in floodplain	Creosote - 5% Ironwood - 5%	Creosote - 4ft tall, 6 wide Ironwood: 15ft tall, 12 wide

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences): No veg. in low flow channels

Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):

See above

Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences)

See above

Site ID Old Kane Spring Rd.			**Stream ID** T6		**page 4 of 4**

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

☐	Algal crusts	✓	Sand-filled channels	☐	
☐	Beach ridges	☐	Springs	☐	
☐	Coppice dunes: active / relict	✓	Substrate staining	☐	
☐	Crusts: carbonate / salt / soda	☐	Vegetation-landscape alignments	☐	
☐	Mud: cracks / curls / polygons	☐		☐	

✓ Other: Soil darker in low flow channels – recently moist due to monsoon

Additional Diagrams and Notes

Vegetation cross-section diagram: Draw a cross-section that identifies the approximate locations along the transect or diagram of geomorphic units (see page 1 of data sheet) where there are changes in vegetation characteristics, as summarized in the vegetation subsections under "Upland" and "Watercourse Complex".

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

Attachment C
Plant List

Plant Species

EUDICOTS

ASTERACEAE—SUNFLOWER FAMILY

Ambrosia dumosa—white bursage
Ambrosia salsola var. *salsola*—burrobrush
Encelia farinosa—brittle bush
Pectis papposa var. *papposa*—manybristle chinchweed
Stephanomeria pauciflora—brownplume wirelettuce

BORAGINACEAE—BORAGE FAMILY

Cryptantha sp. —Unknown Cryptantha species

BRASSICACEAE—MUSTARD FAMILY

Sysimbrium sp. —Unknown mustard species

CACTACEAE—CACTUS FAMILY

Cylindropuntia echinocarpa—Wiggins' cholla
Cylindropuntia ganderi—Gander's buckhorn cholla
Ferocactus cylindraceus—California barrel cactus
Opuntia basilaris—beavertail pricklypear

EUPHORBIACEAE—SPURGE FAMILY

Ditaxis lanceolata—narrowleaf silverbush
Euphorbia micromera—Sonoran sandmat
Euphorbia polycarpa—smallseed sandmat

FABACEAE—LEGUME FAMILY

Olneya tesota—ironwood
Psorothamnus schottii—Schott's dalea
Senegalia greggii—catclaw acacia

FOUQUIERIACEAE—OCOTILLO FAMILY

Fouquieria splendens ssp. splendens—ocotillo

KRAMERIACEAE—RHATANY FAMILY

Krameria bicolor—white ratany

LAMIACEAE—MINT FAMILY

Condea emoryi—desert lavender

MALVACEAE—MALLOW FAMILY

Eremalche rotundifolia—desert fivespot

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

Allionia incarnata var. *villosa*—trailing windmills

ONAGRACEAE—EVENING PRIMROSE FAMILY

Eremothera boothii ssp. *condensata*—shredding suncup

POLYGONACEAE—BUCKWHEAT FAMILY

Eriogonum deflexum—flatcrown buckwheat

SOLANACEAE—NIGHTSHADE FAMILY

Datura discolor—desert thorn-apple

ZYGOPHYLLACEAE—CALTROP FAMILY

Kallstroemia californica—California caltrop
Larrea tridentata—creosote bush

MONOCOTS

POACEAE—GRASS FAMILY

Hilaria rigida—big galleta grass
* *Schismus barbatus*—common Mediterranean grass

* signifies introduced (non-native) species

Attachment D

Wildlife List

Wildlife Species

BIRDS

BUSHTITS

AEGITHALIDAE--LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

INVERTEBRATES

BUTTERFLIES

PIERIDAE—WHITES AND SULFURS

Nathalis iole—dainty sulphur

MAMMALS

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Lepus californicus bennettii—San Diego black-tailed jackrabbit

KANGAROO RATS

HETEROMYIDAE—POCKET MICE AND KANGAROO RATS

Dipodomys deserti—desert kangaroo rat

REPTILES

LIZARDS

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis tigris—tiger whiptail

SNAKES

VIPERIDAE—VIPERS

Crotalus cerastes—sidewinder

5a-21
All Exhibit 4

EXHIBIT 4
SPECIFIC COMMENTS AND ERRATA

Page	Section/Text	Comment
ix	Table of Contents, Appendix D: Biological Resource Reports	Suggest including the following as additional reports in this section: 1) Approved Jurisdictional Determination issued by the U.S. Army Corps of Engineers on February 8, 2021 (see Exhibit 1); and 2) Jurisdictional aquatic resources delineation for the Old Kane Spring Road Site prepared by Dudek in April 2022 (see Exhibit 4).
ES-5	Executive Summary, Project Objectives	Consider revising the final bullet with the following modification: *"Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the ~~Port-Cologne~~ Porter-Cologne Water Quality Control Act (Porter-Cologne Act)."*
ES-7	First paragraph - Summary of alternatives	Consider revising the second sentence, as follows: "The following alternatives, which were evaluated in the 2019 SEIS, were selected and analyzed/compared to the project and are evaluated in the SEIR:"
ES-7 through ES-9	Executive Summary, Summary of Alternatives	On February 8, 2021 the USACE issued an Approved Jurisdictional Determination (see Exhibit 1) confirming that there are no waters of the United States subject to regulation under Section 404 of the Clean Water Act in the project area. As such, all references to "waters of the United States" should be removed and replaced with "waters of the State."
ES-23	Impact 4.2-4, Impact 4.2-5	Significance after mitigation is blank. Insert "LTS."
ES-28	Impact 4.6-4	Replace "rom" with "from."
1-1	Introduction	In the first sentence, change "Condition Use Permit" to "Conditional Use Permit."
1-1	Section 1.1 (Purpose of a Subsequent Environmental Impact Report)	In the second paragraph, eliminate references to waters of the United States. Consider using the following modified text: *"The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of ~~waters of the United States~~ aquatic resources at the Quarry by restoring, enhancing, and reserving aquatic resources at a property where aquatic functions are similar to the impacted functions."*
1-4	Section 1.2 (Summary of the Proposed Project)	Eliminate references to waters of the United States and replace with waters of the state.
1-6	Section 1.5 (Responsible Parties)	Under "Federal Agencies" the USACE is identified as a federal agency to coordinate with for the issuance of a Section 404 permit. However, as previously indicated, the USACE issued an Approved Jurisdictional Determination on February 8, 2021 confirming the absence of waters of the United States in the project area. Therefore, a Section 404 permit is no longer required. Please revise accordingly.
1-6	Section 1.5 (Responsible Parties)	Under "State" agencies the Colorado River RWQCB is identified as issuing a 401 Certification. However, this is incorrect as the aquatic features in the project area are not subject to Clean Water Act jurisdiction. Please revise to state that the RWQCB will be issuing Waste Discharge Requirements for the project in accordance with the Porter-Cologne Act.
1-6	Section 1.5 (Responsible Parties)	Under "Regional and Local Agencies" it is unclear why the Colorado River RWQCB is identified as both a state agency and as a regional and local agency. Please correct or clarify as needed.

Page	Section/Text	Comment
2-2	Section 2.2 (Project Background, Mitigation Sites)	Remove references to "waters of the United States" and replace with "waters of the State."
2-7	Figure 2-2b	The Project site boundary should track the boundaries of Parcels 140-030-090, 140-130-100, and 140-030-110. The adjacent parcels include vegetation communities that will benefit from the restoration activities but are not part of the Project site. Figure 2-2b should be revised accordingly.
2-11 through 2-12.	Section 2.5.1 (Project Location and Access) and Table 2-1	Viking Ranch consists of Parcels 140-030-090, 140-130-100, and 140-030-110, which have a combined total area of approximately 160 acres. There are an additional 43 acres of adjacent land that will benefit from the mitigation project but are not part of the Project site. The discussion of Project location and Table 2-1 should be revised accordingly.
2.25	Section 2.6 (Proposed Project Elements – Viking Ranch Restoration)	Figure 2-6 should be referenced in the first paragraph.
2-26	Baseline Conditions, first bullet	Note that plastic oil containers have been removed from the site.
2-28	Section 2.6 (Following Viking Ranch Mitigation Description)	Consider adding a description for the preservation and long-term resource management of Old Kane Springs Road site, which is currently missing from Section 2.6. The description should reference Figure 2-4.
2-31	Section 2.7.1	For greater clarity, consider adding the following phrase to the end of last sentence: "for Viking Ranch."
3-5	Section 3.3.3 (Statutory and Regulatory SEIR Provisions)	Revise the third sentence of the last paragraph as follows: *"The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of ~~waters of the United States (WoUS)~~ aquatic resources at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions."*
4.1-21	Section 4.1.4.4 (Old Kane Springs Road Preservation Site)	Revise the first sentence as follows: *"Emissions associated with preservation of the Old Kane Springs Preservation Site would be limited to ~~regular maintenance~~ infrequent truck trips for periodic site monitoring and would be negligible."*
4.2-1	Section 4.2 (Biological Resources) - Introductory Section	Consider adding the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (see Exhibit 1) as an additional literature source.
4.2-12, 4.2-23, and 4.2-52	Biological Resources	It should be noted in the FSEIR that Peninsular bighorn sheep is a fully protected under the Fish and Game Code and that no "take" of this species is required or will be sought by USG in connection with the Project.
4.2-26	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Delete the reference to non-wetland waters of the United States and replace with non-wetland waters of the State.

Page	Section/Text	Comment
4.2-27	Section 4.2.1.3 (Biological Resource Conditions at Present, Well No. 3 Site and Pipeline)	Revise the following statement as indicated: *"According to the 2019 SEIS, there are no jurisdictional wetlands present within the proposed pipeline alignment. However, there are a few drainage courses along the alignment that would likely meet criteria as state jurisdictional ephemeral stream channels, subject to permitting under Section ~~16013~~ 1602 of the Fish and Game Code, and ~~possibly~~ as waters of the ~~US~~ State subject to permitting under the Porter-Cologne Act ~~Section 404 of the Federal Clean Water Act (Imperial County 2019)~~."*
4.2-30	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Consider revising the following statement as indicated: *"Pursuant to the ~~federal Clean Water Act, ACOE and RWQCB,~~ Porter-Cologne Act, RWQCB jurisdictional areas include those supporting all three wetlands criteria consistent with and as identified in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. ~~Areas regulated by the RWQCB are generally coincident with the ACOE but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act."~~*
4.2-30 through 4.2-31	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Remove references to "waters of the United States" and replace with "waters of the State."
4.2-34	Table 4.2-4 - Jurisdictional Resources within the Old Kane Springs Road Preservation Site	Remove "ACOE" as a jurisdictional agency from the "Total" line.
4.2-49	Section 4.2.4.3 (Substantial Project Changes - New Information)	The second paragraph of this Section (top of page 4.2-49) should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1).
4.2-63	Impact 4.2-3 (Quarry, Well No. 3 Site and Pipeline Alignment)	This discussion should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1). Among other things, consider revising the text as follows: *"The 2008 EIR/EIS determined that Quarry expansion activities would impact existing streambeds which could be under the jurisdiction of CDFG through Sections 1601-3 of the California Fish and Game Code or the US Army Corps of Engineers through Section 404 of the Federal Clean Water Act. However, since that time, the USACE issued an Approved Jurisdictional Determination confirming there are no waters of the United States subject to regulation under Section 404 of the federal Clean Water Act in the project area. However, the RWQCB maintains jurisdiction over the aquatic resources in the project area under the Porter-Cologne Act"*
4.6-9	Section 4.6.1.3 (Viking Ranch Restoration Site-Floodplain)	The first sentence should be revised as follows: *"The floodplain on the Viking Ranch site is shown on ~~Figure 2-4, "Old Kane Springs Road Preservation Site~~ Figure 2-3, Viking Ranch Restoration Site."*
4.6-22	Section 4.6.4.3 (Substantial Project Changes - New Information)	This discussion should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1).
4.6-24	Section 4.6.4.4 (Viking Ranch Restoration Site)	The first paragraph is not relevant to the Viking Ranch Restoration Site and should be deleted.

Page	Section/Text	Comment
4.7-1	Section 4.7.1.1 (Land Use and Planning – Well No. 3 and Associated Pipeline)	The last sentence ("No development was present in 2008") is incorrect. Disturbance on the private parcel and the pipeline alignment was present prior to 2008. Wells are present on the private parcel, and the pipeline alignment/tramway has an active railroad line in place with a dirt access road paralleling the tramway along its entire length.
4.7-2	Section 4.7.1.2 (Land Use Conditions at Present – Well No. 3 Site and Pipeline Alignment)	The second sentence ("Both the well site and pipeline alignment remain undeveloped with no structures or other improvements") is incorrect. Disturbance on the private parcel and the pipeline alignment was present prior to 2008. Wells are present on the private parcel, and the pipeline alignment/tramway has an active railroad line in place with a dirt access road paralleling the tramway along its entire length.
4.7-13	Section 4.7.4.3 (Impact 4.7-1)	Revised the second sentence as follows: *"There are no established communities adjacent to the Quarry ..."*
4.8-5	Section 4.8.3.1 (Significance Criteria – CEQA Appendix G Significance Criteria)	The CEQA Appendix G Significance Criteria are listed for cultural resources but not for Tribal Cultural Resources. Consider adding the criteria listed below for Tribal Cultural Resources from the CEQA Guidelines (Appendix G, Section XVIII), which were used in the subsequent environmental analysis in Section 4.8.4.4: *"Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe."*
5-16	Section 5.3.5 (Greenhouse Gas Emissions – Project Impacts)	Revise the first sentence as follows: *"Project impacts pertaining to ~~geology, soils, and paleontological resources~~ greenhouse gas emissions, as described in Section ~~4.4~~ 4-5, are as follows:"*
5-17	Section 5.3.6 (Hydrology and Water Quality – Project Impacts)	Revise the first sentence as follows: *"Project impacts pertaining to ~~geology, soils, and paleontological resources~~ hydrology and water quality, as described in Section ~~4.4~~ 4-6, are as follows:"*

SUGGESTED EDITS TO MITIGATION MEASURES PROPOSED BY CDFW

Mitigation Measure Proposed by CDFW with Edits Proposed by USG (proposed deletions shown in strike-out and additions shown underlined)	**Explanation for Proposed Edits**
Mitigation Measure BIO-[A]: Assessment of Biological Resources Prior to ~~adoption of the CEQA document and Project~~ construction activities for Quarry Well No. 3, the associated pipeline, and Viking Ranch, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the ~~Project~~ construction footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all ~~those which meet the CEQA definition (~~“endangered, rare or threatened species” as defined in CEQA Guidelines § 15380~~)~~. The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW~~ and the U.S. Fish and Wildlife Service~~, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.	The CEQA document (*i.e.*, the SEIR) will be certified prior to approval and construction of the well and pipeline. Therefore, there is no need to require prior “adoption” of the CEQA document. The scope of this proposed measure should be limited to the Quarry Well, the associated pipeline, and Viking Ranch. Construction activities associated with the Quarry, which were previously evaluated under CEQA and NEPA and approved by the County and BLM, will be subject to other equivalent mitigation measures. The “species to be addressed” should be more precisely defined as indicated. Further consultation with USFWS is unnecessary. USG has already consulted the USFWS under Section 7 of the Federal Endangered Species Act and obtained a Biological Opinion from the USFWS.

5b-1

Mitigation Measure 3.4-9: Burrowing Owl Avoidance	
Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with ~~all Project components (~~expansion of quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch~~)~~ over the lifetime of the Project. ~~If burrowing owls are detected during the focused surveys, the~~ The qualified biologist and Project proponent~~, in coordination with BLM,~~ shall prepare a Burrowing Owl Plan that shall be submitted to CDFW ~~and U.S. Fish and Wildlife Service (USFWS)~~for review and approval prior to commencing ~~Project~~ the activities specified above. The plan shall serve as a protocol of actions to address occupied habitat within future phases of quarry expansion, the proposed site for Well #3 and associated pipeline, and Viking Ranch. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the ~~number and location of occupied burrow sites,~~ acres of burrowing owl habitat that will be impacted, details of site monitoring and reporting requirements, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. ~~If impacts to occupied burrows cannot~~	Consistent with the comment from CDFW, this measure would require that a focused burrowing owl survey be conducted prior to vegetation removal and ground breaking activities. However, instead of requiring the preparation of a Burrowing Owl Plan upon *detection* of an individual burrowing owl specimen during the preconstruction survey, as suggested by the CDFW, this measure, as revised, would require the preparation of a Burrowing Owl Plan *prior to* vegetation removal or ground-disturbing activities. The Burrowing Owl Plan would serve as a standard pre-construction operations manual for the treatment of new quarry phases and other project construction. Among other things, the Burrowing Owl Plan would establish pre-defined survey methods and translocation protocols to avoid or minimize potential impacts. Note: USG has or will obtain all necessary approvals from the USFWS and will comply with all applicable federal statutes and regulations, including NEPA. For this reason, there is no need to require coordination with BLM or approval by USFWS in this CEQA mitigation measure.

5b-2

~~be avoided, information shall be provided regarding~~ The Burrowing Owl Plan shall identify adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW ~~and USFWS~~ review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, the Project activities specified above shall be immediately halted until pre-defined avoidance and minimization measures contained in the Burrowing Owl Plan have been implemented. ~~The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance, minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities.~~		5b-2 Cont.
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […] To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs. Regardless of the time of year, nesting bird surveys	The first sentence (which CDFW proposes to be stricken) should be retained. The requirement that certain activities be conducted outside the nesting season is part of the existing mitigation measure and is already a requirement of the BLM approval.	5b-3

shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with ~~all Project components (~~the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch~~)~~ and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys for any of the activities specified above, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on the nature of the planned Project activities, species-specific disturbance tolerance, location of the nest, and nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance. […]	The activities to which this measure would apply should be specified with more precision as indicated. Additional criteria for determining the size of the buffer should be included as indicated.

5b-3
Cont.

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats	
Prior to the initiation of ~~Project activities~~ quarrying activities into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch within suitable special-status bat roosting habitat, ~~Imperial County~~ the applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.	The activities to which this measure would apply should be specified with more precision as indicated. This measure should be limited to special-status bats (not common bats).
If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply:	Identify the conditions for maternity vs. hibernacula more clearly, as indicated.
1. ~~for~~ For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be	

5b-4

initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed. 2. ~~A~~ For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein.		5b-4 Cont.
Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. ~~Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.~~	The project area may provide suitable roosting sites (i.e., rock crevices) for special-status bat species. However, the potential loss of rock crevices on the site would not significantly affect roost site availability in the Fish Creek Mountains or the surrounding region. The Project site is adjacent to the Fish Creek Mountains Wilderness managed by the BLM, comprising more than 21,000 acres, and Anza Borrego Desert State Park, comprising more than 600,000 acres. Both are shown on Figure 1 of the Biological Resources Technical Report. Both the Fish Creek Wilderness and Anza Borrego Desert State Park permanently protect extensive areas of rugged desert mountain landscapes where rock crevices suitable for bat roosting are abundant. Roosting crevice availability does not appear to limit local special-status bat populations.	5b-5

Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […]	
Throughout the lifetime of the Project, the Project proponent shall ~~eliminate all nonessential lighting throughout the Project area and~~ avoid or limit the use of artificial light to the extent practicable during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all new lighting for the Project is fully shielded, cast downward, reduced in intensity to the greatest extent practicable, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). ~~Imperial County shall ensure use of~~ To the extent practicable, the Project proponent shall use LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.	This measure should apply only to any new lighting. Existing lighting is part of baseline conditions. The phrase "greatest extent" should to be qualified based on what is "practicable." Without this qualifier, "greatest extent" could be interpreted to mean no lighting at all, which is infeasible. Mitigation measures will be imposed by the County as conditions of approval.
[…]	

5b-6

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.	No changes proposed.

Kristin Faoro

From: Diana Robinson <DianaRobinson@co.imperial.ca.us>
Sent: Friday, June 2, 2023 8:56 AM
To: Michael Abraham; Bruce Steubing
Cc: Kristin Faoro
Subject: FW: SP21-0002 USG Water Well Project request for comment deadline extension to early hours of Monday June 5, 2023

Good morning Michael and Bruce,

Please see email below from Ms. Harmon.

Thank you,
Diana

From: Edie Harmon <desertharmon@gmail.com>
Sent: Thursday, June 1, 2023 10:23 PM
To: Diana Robinson <DianaRobinson@co.imperial.ca.us>
Subject: Re: SP21-0002 USG Water Well Project request for comment deadline extension to early hours of Monday June 5, 2023

CAUTION: This email originated outside our organization; please use caution.

Diana,

Thank you for taking time to speak on the phone twice today. Per our conversation, I would like to request an extension of the comment deadline from the end of June 2 to Sunday night or Monday morning June 5t, 2023. I am very discouraged because my computer keeps deleting things I am writing for an attachment to an email or text in the email itself and then shutting down the computer. I have no clues as to the cause or cure, but I would like to try to get something in writing completed. I have medical appointment in San Diego tomorrow, June 2 and would not be able to get home to send an email before 5 PM. Ongoing research in the Jacumba Wilderness along the border wall will require an approximate 9 mile, 9 hour walk to the border in Skull Valley on Saturday and a 14 hour, approximately 15 mile walk to the border in Davies Valley starting between 2 - 3 AM by moonlight on Monday morning before the day gets too hot. That would leave me Sunday to try to get something to you in writing before you start your work day Monday morning. 6a-1

In August 2022 I submitted hundreds of pages of text and photos to CBP in response to their proposed remediation/reclamation for just a 14 mile segment of border wall construction from Mt. Signal area west to the west side of Pinto Wash in Davies Valley in the Jacumba Wilderness. Much of what I learned and observed from the impacts of very heavy local downpours and the hurricane of 2022 seem to have confirmed many of the concerns and predictions about reclamation and remediation proposals. Failures I have seen are actually much worse than anything I could have predicted. I have not visited the locations of specific areas mentioned in the USG Well No 3 DSEIR, but I must admit that I am not optimistic about mitigation success as identified in the table in the DSEIR ES and in text throughout the document. Why? Because I have photo-documented what I see as the design and construction failures by the Army Corps of Engineers and the contractor from Montana. I believe that they grossly underestimated the power of moving water in Imperial County, whether from a local downpour or from a hurricane that was far less damaging than the Hurricanes in 1976 and 1977 in SW Imperial County. There is a spectacular example of geology in action just a little more than 2 miles from my home where a once beautiful canyon has had many canyon wall collapses since my first photos of March 2022, with material falling to the ground as I was getting ready to take a photo. From the September 2022 hurricane, there are photos of water flowing across the border to the south, with water 6-8 feet deepin Pinto Wash ion Davies 6a-2

Valley, The water flowing back to the north and into the US in Pinto Wash to east of wilderness was 10-15 feet deep according to Border Patrol and the vegetative debris was piles up against the border wall along the west facing slope to the same depth. The wash on the north experienced scouring of sand in the wash and I could look out of the wash at eye-level because erosion was shoulder deep. Several times local downpours created large and fairly deep temporary lakes. 6a-2 Cont.

The DSEIR repeatedly references the 2018 Dudek groundwater study, but I could find no information in the 2023 DSEIR about the rainfall events of January2021 and August and September 2022 and other 2022 dates that I cannot remember. Did those rainfall events result in wash and slope geology changes or any significant flood erosion. There were videos of the floodwater flowing from the Jacumba Mountains and into Salton Sea. I found no discussion of specific flood and erosion events from 2021 and 2022 and even early 2023. 6a-3

DSEIR p. 4.6-3 states that the average annual rainfall is 4-5 inches. Average is meaningless because rainfall is highly variable near the mountains. The rainfall in Ocotillo is very different from rainfall where I live several miles to the SE, but closer to the mountains and therefore more subject to the mountain rainfall shadow effect. Where was rainfall data monitored in relation to any of the specific sites mentioned in the DSEIR.. 6a-4 FIG 4.6-2 indicates that the site was flown over 5-5-2022, or several months before the heaviest rain events in SW Imperial County, including the hurricane of 9/2022. This suggests to me that the Floodplain map is very likely to be outdated and that there may have been some serious changes to drainages and places of heaviest or deepest stream flow. That is certainly what I saw near the international border during the past year's rain events.. 6a-5

Many more questions that need better organization and page references..

Because the well is not in the same basin as the residential communities of the Ocotillo Nomirage Community Area, I do not see well interference or adverse impacts from the Well No 3 UNLESS this is followed by a request to increase groundwater export from the existing USG wells near the community of Ocotillo. Does increased quarry output mean increased factory output that would lead to a request to increase export of potable groundwater from wells in the Ocotillo area? 6a-6

Thank you for considering this request.. My computer and email have so many times disappeared what I was writing, I am hoping that this will reach you. Guess I am too tired for so many efforts to start over that I just need sleep now. My apologies for the T-Mobile cell phone disaster that lasted more than a month, I hope ATT will be a bit more reliable. I will be in San Diego for medical appointments, but might be able to hear the phone ring if you want to try to call..

Sincerely,
Edie Harmon
619-729-7178

On Wed, May 24, 2023 at 2:00 PM Diana Robinson <DianaRobinson@co.imperial.ca.us> wrote:

> Hello Ms. Harmon,
>
> I am sorry you are having issues with phone services and internet access. Please let me know if you'd like to meet in our office to go over comments.
>
> Thank you,
>
> Diana

From: Edie Harmon <desertharmon@gmail.com>
Sent: Tuesday, May 23, 2023 5:55 PM
To: Diana Robinson <DianaRobinson@co.imperial.ca.us>
Subject: Re: SP21-0002 USG Water Well Project

CAUTION: This email originated outside our organization; please use caution.

Diana,

I will try to get in some comments. As I tried to tell Planning and the County , the cell phone tower across from my home was basically non-functional since April 6th and officially decommissioned and removed from all T-Mobile tower location maps. I was told that the tower will not be recommissioned. I have to drive to the hill at the bend of Hwy 98 to north of me to have cell phone service. Internet service has been unreliable for some time. Sometimes I can get text messages, but only sometimes. I cannot get voicemail messages where I live.

Modern technology is worse than when we had to drive 6.5 miles to use a pay phone at a gas station. Now there are no pay phones, but everyone is expected to have a cell phone and internet access. How very sad! 5G cell phone service now means no cell phone access, only "No Service". So much for County approved locations and construction for cell phone towers, even ones in service for probably decades.

Edie

On Tue, May 23, 2023 at 3:09 PM Diana Robinson <DianaRobinson@co.imperial.ca.us> wrote:

> Good afternoon Ms. Harmon,

> > I called and could not leave a voice message so I write to reach out and ask if you have any questions or comments on the USG Project. Commenting period ends June 2, 2023.
> >
> > https://www.icpds.com/assets/USG-Plaster-City-Quarry-Expansion-&-Well-No.-3-DSEIR-COMBINED-1681836171.pdf
> >
> > Thank you,
> >
> > Diana Robinson, Planning Division Manager
> >
> > Imperial County Planning & Development Services
> >
> > 801 Main Street, El Centro, CA 92243
> >
> > Phone (442) 265-1736 x1751 icpds.com

To: Diana Robinson, Planning Division Manager, Imperial County Planning Department (Diana Robinson <DianaRobinson@co.imperial.ca.us>

From: Edie Harmon (desertharmon@gmail.com)

Re: USG Plaster City Quarry Expansion & Well No. 3 Project, Project SEIR, CUP Application 20-0016, IS 22-0021; DRAFT SEIR dated April 2023 and some Appendices

Date: June 4, 2023 (with late submission approved by Diana Robinson on June 2, 2023)

My apologies. This is being prepared following the disappearance of several earlier efforts to submit comments. For mysterious reasons my computer is having problems with the Word Perfect 2021 program I have been using for years, and even stranger computer shut-downs while I was working on my comments. Thank you for being willing to accept these late submitted comments. I have not visited the various sites of project components because a have a low clearance Honda Fit and assume that access to the area would require a different vehicle. Thus, these comments and questions will be general in nature and not USG project well or restorationsites specific. 6b-1

1. These comments will be limited because I will assume that comments on biological resources including the endangered Peninsular Bighorn Sheep (PBS) will be addressed by PBS experts at CDFW, USFWS, and BLM. Thus I do not plan to submit additional comments on PBS, 6b-2

2. These comments are related to hydrology, flooding, and changes in geological or surface features in response to issues of heavy local downpours and the most recent hurricane of September 2023. I was living in Imperial County during the hurricane of September 1976 and in Ocotillo during the August 1977 hurricane and several serious flood events in the Ocotillo, Nomirage and Yuha area in SW Imperial County. I recall that the flood waters coming from the Jacumba Mountains destroyed the 2 westbound lanes of I-8, the railroad tracks and bridge to the west o0f Ocotillo and much of the central party of Ocotillo. Even through there were periods of standing water there was no measurable increase in static water levels in wells monitored by USGS in response to any hurricane or local downpour and flash flooding events. There have been many times when Hwy 98 was closed to all but local traffic because standing water was so deep and the road was filled with sand and rocks that were carried to the E and NE from the Jacumba Mountains where rains were heavier than locally. 6b-3

3. In August 2022 I submitted hundreds of pages of text and photos to CBP in response to their proposed remediation/reclamation for just a 14 mile El Centro 1 segment of border wall construction from Mt. Signal area going west to the west side of Pinto Wash in Davies Valley in the Jacumba Wilderness. Much of what I learned and observed from the impacts of very heavy local downpours and the hurricane of 2022 seem to have confirmed many of the concerns and predictions about reclamation and remediation proposals. Failures related to unexpected rainfall and its consequences that I have seen and photographed are actually much worse than anything I could have predicted. The DSEIR dated April 2023, approximately 8 months AFTER the local downpour of Aug. 8, 2022 that caused serious erosion damage along the CBP border wall in Skull Valley and left a stranding lake, one of many that I visited in 2022. 6b-4

Photo of local downpour on 8/8/22 was taken from my property. There was no rain where I live. Four days later, there was standing water that appeared to have been as much as 4 - 6 feet deep near the large dune on the west side of Skull Valley in the JacumbaWilderness that had received water from the downpour seen above right.

4. I have not visited the locations of specific areas mentioned in the USG Well No 3 DSEIR, but I must admit that I am not optimistic about mitigation success as identified in the table in the DSEIR ES and in text throughout the document. Why? Because I have photo-documented what I see as the design and construction failures by the Army Corps of Engineers (ACOE) and the contractor from Montana. I believe that they grossly underestimated the power of moving water in Imperial County, whether from a local downpour or from a hurricane that was far less damaging than the Hurricanes in 1976 and 1977 in SW Imperial County. Revegetation and/or reseeding become increasingly problematic once there has been significant disturbance or removal of topsoil and upper layers of soil near Mt. Signal. 6b-4 Cont.

5. DSEIR Fig. 2-3 and Fig. 2-6 Viking Ranch Restoration site use an outdates aerial image from 2018 and probably should be updated following the hurricane of September 2022 is flood waters passed through this property and based on video images made of flood waters flowing from mountains toward Salton Sea. If this property was unimpacted by flood waters since the 2018 image, this information should be clarified. Figures in the Dudek 2018 appendix for these sites suggest that there may well be changes to sizes and locations of some stream channels. It was nice to be able to enlarge figures in the Appendices, even if they are outdated. 6b-5

6. Have there been flood or drainage changes that affect the quarry and potentially details of the 2008 Reclamation Plan approval? If so, should the 2003 Reclamation plan recorded as 2008-018432 be modified or updated? The approved 2003 reclamation plan is now 20 years old. (See DSEIR p. 2-20.) DSEIR p. 2-23 states theat there have been, no changes to the 2003 Reclamation Plan. 6b-6

7. The "Confidential Cultural Resources Report for the Us Gypsum Company Expansion/modernization Project Supplemental EIS Imperial County, California" Prepared by Pacific Legacy, Inc., 900 Modoc Street, Berkeley, California 94707, Project No. 3215-01, June 2018 had each page identified as "confidential", so I chose not to read it. This report probably should not have been included in the documents distributed for public review. 6b-7

8. DSEIR p. 2-24. What are the plans if well #3 fails to meet the projected production output anticipated? There can be no guarantees about the water quality or productivity in terms of gpm or gpd from any well that has not yet been drilled. That is why well drillers with whom I have spoken require payment for drilling and completing construction of a new well prior to finishing the work. They get paid whether or not the well can produce any given quantity of water or even water at all. To drill and complete a well of 6 inches in diameter and 565 feet deep will not be inexpensive. P. 2-25 fails to give the diameter of the water pipeline. 6b-8

9. Site restoration of the two sites sounds interesting even if I am skeptical. I would be interested in a site visit prior to and during of following completion of the restoration work. Have professionals for the work been selected yet? 6b-9

10. Has there been evidence of revegetation success at the quarry site, or is there just reliance on the old 2003 reclamation Plan? I am aware of many revegetation failures on BLM lands in SW Imperial County7, and special failure of revegetation where sand and gravel operations have been completed. Can there be any revegetation success without supplemental water being added at this quarry site? Might it be possible for tours of the revegetation sites before, during or after for interested members of the public? 6b-10

Section 4.6 Hydrology and water quality and Appendix G, G-1 and G-2

11. Dudek 2018 Hydrology and Water Quality Study is now five years old. 6b-11

12. DSEIR p. 4.6-1 states that most of rain that falls in December through March, However, my experience is that the heaviest rainfalls, local downpours and hurricanes seem to come in August-September and can cause serious flash floods with extremely significant flash flood caused erosion of slopes and washes. It is the rains in the mountains in SW Imperial County that may be more relevant to the USG projects than the rainfall in El Centro to the east. Rainfall is very local in SW Imperial County except during hurricanes. What has been the annual rainfall at various locations for the different components of this USG project since the USG project was first proposed? 6b-12

13. DSEIR p. 4.6-3 states that the average annual rainfall is 4-5 inches. "Average" is meaningless because rainfall is highly variable near the mountains. The rainfall in Ocotillo is very different from rainfall 6b-13

where I live several miles to the SE of Ocotillo, but closer to the mountains. Therefore this area is more subject to the mountain rainfall shadow effect. Where was rainfall data monitored in relation to any of the specific sites mentioned in the DSEIR? Here there have been numerous flash flood events bringing moving water from the mountains and leaving standing water in low areas flooding the state Hwy 98 at numerous locations.

6b-13 Cont.

14. DSEIR 4.6-3 describes how flash flooding can cause changes to braided channels or changing aspects of existing stream channels. Has this happened during nor as a result of the Hurricane of 2022? If so, should maps be revised to reflect these changes? Where and what is the current condition of channels through which the flood waters of the 2022 hurricane as they flowed toward the Salton Sea? A map would be educational if nothing else. Did flood waters from the hurricane adversely impact desert pupfish habitat? If so how?

6b-14

15. Is the soil in the area of the project more porous than the soils of the Ocotillo-Coyote Wells Groundwater Basin? I recall Dr. John Izbicki of USGS Water Resources in San Diego reminding me that it would take a long period of standing water to be able to percolate down through 100 feet of dry soil to reach the water table if there is to be any significant recharge. His way of explaining to me why even with flooding and standing water there has been no measurable recharge from the hurricanes of 1976 and 1977 and subsequent heavy rainfall events in the Ocotillo area and its surrounding mountains. Or another way of saying that use and outflow including evapotranspiration exceed any recharge. He said this basin has fossil groundwater with the last significant recharge at the end of the last Ice Age. With declining water levels, when the water is gone, the water is gone.

6b-15

16. DSEIR FIG 4.6-2 indicates that the site was flown over 5-5-2022, or several months before the heaviest rain events in SW Imperial County, including the hurricane of 9/2022. This suggests to me that the Floodplain map is very likely to be outdated and that there may have been some serious changes to drainages and places of heaviest or deepest stream flow. That is certainly what I saw near the international border during the past year's rain events. See photos on last page.

6b-16

17. "According to Dudek (2021), historical aerial imagery and topographic maps show that Coyote Creek meandered across the site creating braided channels through the unconfined basin area. Coyote Creek is within the Borrego Springs Sub-basin 18100203, which lies within the same sub-basin as the proposed Quarry expansion. The area receives water from direct precipitation that flows from Coyote Creek, the surrounding ..." (DSEIR 4.6-9) This suggests that the map of channels should be updated following the flows from Hurricane of Sept. 2022.

6b-17

18. All groundwater studies cited in the DSEIR appear to be outdated, with the most recent being 2018. Since that time there have been several significant flood events which should have triggered at least a modest update of the Dudek and Bonadiman 2018 hydrology studies and/or mention of such events in the 4/2023 USG DSEIR. See DSEIR p. 4.6-19. There was no explanation for why the hydrology studies were not updated for the April 2023 DSEIR and/or whether changes would in any way change some of the restoration proposals or information relevant to the desert pupfish habitat and survival.

6b-18

19. DSEIR p. 4.6-22 states as follows: "**New Information** A Jurisdictional Delineation (Hernandez Environmental Services 2016), Hydrologic and Water Quality Study (Hydrology Study) (Dudek 2018), and Update on Groundwater Conditions Memorandum (Todd Groundwater 2018) were completed as part of the 2019 SEIS." Let me remind you that the DSEIR was dated April 2023. This is at least 7 months after the September hurricane where videos showed flood waters raging down and entering lands and drainages just west of Salton Sea. This is June 2023 so SEIS of 2019 is about four years out of date related to flash flooding and the impacts of the 2022 hurricane event. This information should be updated once again. Why was it not updated? Perhaps I missed an update in 2023 related to the 2022 hurricane, but I could not find it in documents for the DSEIR of April 2023.

6b-19

20. Because well #3 is not in the same basin as the residential communities of the Ocotillo Nomirage Community Area, I do not see well interference or adverse impacts from the Well No 3 **UNLESS** approval of the CUP for well No 3 is followed by a request to increase groundwater export from the existing USG wells near the community of Ocotillo to support increased factory operations at Plaster City. Does increased quarry output mean increased factory output that would lead to a request to

6b-20

6b-20 Cont.

increase export of potable groundwater from wells in the Ocotillo area?

6b-21

21. There is a spectacular example of geology in action just a little more than 2 miles from my home where a once beautiful canyon has had many canyon wall collapses since my first photos of March 2022, with material falling to the ground as I was getting ready to take a photo. From the September 9, 2022 hurricane, there are photos of water flowing across the border to the south, with water 6-8 feet deepin Pinto Wash in Davies Valley, The water flowing back to the north and into the US in Pinto Wash to east of wilderness was 10-15 feet deep according to Border Patrol and the vegetative debris was piles up against the border wall along the west facing slope to the same depth Pinto wash flowing north on the north side of the border experienced scouring of sand in the wash and I could look out of the wash at eye-level because erosion was shoulder deep. Scouring of Pinto Wash north of border barrier and concrete paved road showing the impact of the 2022 hurricane. In places, the flowing water undercut the concrete road creating a drop of almost 3 feet. Photos below are from June 3, 2023. Dark material is foreground is where grading equipment and dozers tried to grind the plant debris into sand north of the concrete road. Just to show the power of moving water.

6b-22

22. Several times local downpours created large and fairly deep temporary lakes. The USG 2023 DSEIR repeatedly references the 2018 Dudek groundwater study, but I could find no information in the 2023 USG DSEIR about the rainfall events of January 2021 and August and September 2022 and other 2022 dates that I cannot remember. Did those rainfall events result in wash and slope geology changes or any significant flood erosion in the vicinity of the USG project components areas? There were videos of the floodwater flowing from the Jacumba Mountains and into Salton Sea. I found no discussion of specific flood and erosion events from 2021 and 2022 and even early 20223 in the April 2023 DSEIR.

Thank you for accepting these questions and concerns.

Sincerely,

Edie Harmon, desertharmon@gmail.com

APPENDIX B: MITIGATION MONITORING AND REPORTING PROGRAM

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APPENDIX B
MITIGATION MONITORING AND REPORTING PROGRAM

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
AIR QUALITY				
Mitigation Measure 3.6-1a: USG shall ensure all equipment is maintained and tuned according to manufacturer's specifications.	Throughout all construction activities	Permittee or its contractor(s)	Imperial County Planning and Development Services inspection	
Mitigation Measure 3.6-1b: USG shall schedule production activities to minimize daily equipment operations and idling trucks.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services inspection	
Mitigation Measure 3.6-1c: USG shall comply with all existing and future California Air Resources Board (CARB) and ICAPCD regulations related to diesel-fueled trucks and equipment, which may include: (1) meeting more stringent engine emission standards; (2) retrofitting existing engines with particulate traps; (3) use of low or ultra-low sulfur diesel fuel; and (4) use of alternative fuels or equipment.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Air Pollution Control District inspection	
Mitigation Measure 4.1-1a: The following standard mitigation measures for fugitive PM10 control shall be implemented throughout project construction activities at the Viking Ranch Restoration Site: a) All disturbed areas, including Bulk Material storage which is not being actively utilized, shall be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by using water, chemical stabilizers, dust suppressants, tarps or other suitable material such as vegetative ground cover. b) All on site and off-site unpaved roads will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering. c) All unpaved traffic areas one (1) acre or more with 75 or more average vehicle trips per day will be effectively stabilized and visible emissions shall be limited to no greater than 20 percent opacity for dust emissions by paving, chemical stabilizers, dust suppressants and/or watering. d) The transport of Bulk Materials shall be completely covered unless six inches of	Throughout all construction activities	Permittee or its contractor(s)	San Diego County Air Pollution Control District	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
freeboard space from the top of the container is maintained with no spillage and loss of Bulk Material. In addition, the cargo compartment of all Haul trucks is to be cleaned and/or washed at delivery site after removal of Bulk Material. e) All track-Out or Carry-Out will be cleaned at the end of each workday or immediately when mud or dirt extends a cumulative distance of 50 linear feet or more onto a paved road within an urban area. f) Movement of Bulk Material handling or transfer shall be stabilized prior to handling or at point of transfer with application of sufficient water, chemical stabilizers or by sheltering or enclosing the operation and transfer line. g) The construction of any new unpaved road is prohibited within any area with a population of 500 or more unless the road meets the definition of a Temporary Unpaved Road. Any temporary unpaved road shall be effectively stabilized, and visible emissions shall be limited to no greater than 20 percent opacity for dust emission by paving, chemical stabilizers, dust suppressants and/or watering.				
Mitigation Measure 4.1-1b: The following standard mitigation measures for construction combustion equipment shall be implemented throughout project construction activities at the Viking Ranch Restoration Site: a) Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel-powered equipment. b) Minimize idling time either by shuttling equipment off when not in use or reducing the time of idling to 5 minutes as a maximum. c) Limit, to the extent feasible, the hours of operation of heavy-duty equipment and/or the amount of equipment in use. d) Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).	Throughout all construction activities	Permittee or its contractor(s)	San Diego County Air Pollution Control District inspection	

	IMPLEMENTATION PROCESS			
MITIGATION MEASURES	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
BIOLOGICAL RESOURCES				
Mitigation Measure 3.5-1a: Revegetation: Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 3.5-1b: Phasing of Quarry development and closure: Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 3.5-1c: Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.	Prior to disturbance of previously undisturbed areas	Permittee; Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	
Mitigation Measure 3.5-1d: Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the U.S. Fish and Wildlife Service (USFWS) that will: (1) provide a statement about whether the proposed project is “likely or not likely to jeopardize” the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.	This portion of Mitigation Measure 3.5-1d has been successfully implemented. Formal consultation with the USFWS under Section 7 of the FESA was completed in 2019. The resulting Biological Opinion prepared by the USFWS is provided as Appendix D-3 of the Draft SEIR.	Not applicable	Not applicable	
Mining shall be conducted only as approved in the Plan of Operation and the Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope	This portion of Mitigation Measure 3.5-1d shall be	Permittee or its contractor(s)	Imperial County Planning and Development	

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	Timing	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
contouring and revegetation with native plant species as specified in the Reclamation Plan. USG shall instruct its employees and other visitors to the mine to avoid peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. USG shall establish a training program, including new-employee orientation and annual refresher, to educate employees regarding bighorn sheep and the importance of avoidance. USG shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the quarry's environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.	implemented throughout project implementation		Services	
Mitigation Measure 3.5-1e: Barefoot banded gecko: Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFW and field biologists would be required to hold Memoranda of Understanding with the CDFW to search for this species. If the species is present, then consultation with CDFW under Section 2081 of CESA to "take" barefoot banded gecko must be completed prior to land disturbance.	Prior to disturbance of previously undisturbed areas	Permittee; Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services; CDFW consultation	
Mitigation Measure 3.5-1f: Agency contacts for impacts to streambeds: Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the California Department of Fish and Wildlife (CDFW) to determine whether CDFW holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code.	Prior to disturbance of previously undisturbed areas	Permittee or its contractor(s)	CDFW consultation	
Mitigation Measure 3.5-2: USG will comply with the Flat-tailed Horned Lizard Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines. **See Appendix 3 of Attachment 1 of this MMRP for the list of standard mitigation measures*	Prior to construction of Well No. 3 and associated pipeline	Permittee; Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	

	IMPLEMENTATION PROCESS			
MITIGATION MEASURES	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
Mitigation Measure 3.4-5: Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk (Tamarix) and fountain grass (Pennisetum) in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the area associated with the Proposed Action, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the Proposed Action.	Prior to initiating construction and throughout project implementation	Permittee or its contractor(s); BLM; Imperial County Planning and Development Services	BLM and Imperial County Planning and Development Services review and inspection	
Mitigation Measure 3.4-6: Mining Activity Monitoring and Reporting. Prior to the beginning of any Quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to the approval of the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS. The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation and mitigation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:	Prior to disturbance of previously undisturbed areas	Permittee; Qualified biologist(s) retained by Permittee; BLM; USFWS	BLM and USFWS approval; BLM annual compliance review	
• The Designated Biologist will notify BLM's Authorized Officer and USFWS at least 14 calendar days before the initiation of Quarry expansion of new ground-disturbing activities.	At least 14 days prior to disturbance of previously undisturbed areas	Permittee; Qualified biologist(s) retained by Permittee	BLM and USFWS	
• The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys and will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.	Prior to and throughout disturbance of previously undisturbed areas	Permittee; Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	
• The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and USFWS in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.	Throughout project implementation	Permittee; Qualified biologist(s) retained by Permittee	BLM and USFWS	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
• The Designated Biologist or Biological Monitor will visit the Quarry site periodically (no less than once per month) throughout the life of the project to administer the Worker Education Awareness Program (WEAP) and ensure compliance with the plans and programs listed below. – The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of these programs/plans as well as compliance/non-compliance with each conservation measure: (1) Integrated Weed Management Plan; (2) WEAP; (3) Reclamation Plan; (4) Wildlife Mortality Reporting Program; and (5) PBS Monitoring Plan.	Throughout project implementation	Permittee; Qualified biologist(s) retained by Permittee	BLM annual compliance review	
Mitigation Measure 3.4-7: Worker Education Awareness Program (WEAP). Prior to project approval, USG will develop a WEAP, to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction, operations, and maintenance personnel. The WEAP will be approved by the BLM, USFWS, and CDFW, and will include the following: (1) Descriptions of special-status wildlife of the region, including PBS, and including photos and how to identify adult and sub-adult male and female PBS; (2) The biology and status of special-status species of the area, including PBS; (3) A summary of the avoidance and minimization measures and other conservation measures; (4) An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data; (5) An explanation of the flagging or other marking that designates authorized work areas; and (6) Actions and reporting procedures to be used if any wildlife, including PBS is encountered.	Prior to project approval and throughout project implementation	Permittee or its contractor(s); BLM; USFWS; CDFW	BLM; USFWS; CDFW review; Imperial County Planning and Development Services inspection	
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures: USG will implement the following measures throughout the life of the project (e.g., Plant and Quarry operations). • To the extent feasible, initial site clearing for Quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) will be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs. Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with the expansion of quarrying activities into previously undisturbed areas, the	Prior to disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
construction of Well No. 3 and associated pipeline, and restoration of Viking Ranch and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys for any of the activities specified above, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on the nature of the planned project activities, species-specific disturbance tolerance, location of the nest, and nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines if the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. A qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.				
• The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven days prior to initial site clearing for Quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from "harm's way" prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist in consultation with CDFW will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active.	No more than seven (7) days prior to disturbing previously undisturbed areas	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services; CDFW consultation	
• For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the workday. The Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85º F) for the presence of flat-tailed horned lizard or Colorado Desert fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations)	Throughout project implementation	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
shall be inspected for the presence of any wildlife, particularly including the flat-tailed horned lizard or Colorado Desert fringe-toed lizard, prior to backfilling.				
• The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no Quarry expansion activities are conducted while PBS are within a 0.25-mile radius of the activity.	Throughout project activities within expansion areas	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	
• Speed limits along all access roads will not exceed 15 miles per hour.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• Throughout the lifetime of the project, the project proponent shall avoid or limit the use of artificial light to the extent practicable during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all new lighting for the project is fully shielded, cast downward, reduced in intensity to the greatest extent practicable, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). To the extent practicable, the project proponent shall use LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• The boundaries of all areas to be newly disturbed (including Quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground-disturbing activities occur outside the staked area during initial Quarry expansion or ground disturbance.	Prior to disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services periodic inspection	
• Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the PoO).	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspection	

	IMPLEMENTATION PROCESS			
MITIGATION MEASURES	**Timing**	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
• No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.	Throughout project implementation	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	
• To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, Quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.	Throughout project implementation	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services	
• No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the project site, on off-site project facilities and activities, or in support of any other project activities.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.	Throughout project implementation	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services; BLM, USFWS, and CDFW review	
• Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats: Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by	Prior to and throughout disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist(s) retained by Permittee	Imperial County Planning and Development Services; CDFW review	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply: – For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed. – For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided				

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
by accepted exclusion and deterrent techniques. – Implementation of this measure, combined with the other measures provided in this SEIR, will reduce impacts to special status bats to a less than significant level; however, additional mitigation measures may be required through the regulatory permit process.				
Mitigation Measure 3.4-9: Burrowing Owl Avoidance. Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with expansion of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of Viking Ranch over the lifetime of the project. The qualified biologist and project proponent shall prepare a Burrowing Owl Plan that shall be submitted to CDFW for review and approval prior to commencing the activities specified above. The plan shall serve as a protocol of actions to address occupied habitat within future phases of quarry expansion, the proposed site for Well No. 3 and associated pipeline, and Viking Ranch. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the acres of burrowing owl habitat that will be impacted, details of site monitoring and reporting requirements, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been reevaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. The Burrowing Owl Plan shall identify adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The project proponent shall implement the Burrowing Owl Plan following CDFW review and approval. Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of project-related activities and within 24 hours prior to ground disturbance, in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version). Preconstruction surveys shall be performed by a qualified biologist following the recommendations and guidelines provided in the Staff Report on Burrowing Owl Mitigation. If the preconstruction surveys confirm occupied burrowing owl habitat, the project activities specified above shall be immediately halted until pre-defined avoidance	Prior to disturbance of undisturbed areas; no less than 14 days prior to start of project-related activities and within 24 hours prior to new ground disturbance	Permittee; Qualified biologist(s) retained by Permittee; CDFW	Biological monitoring; CDFW	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
and minimization measures contained in the Burrowing Owl Plan have been implemented.				
Mitigation Measure 3.4-10: Critical Habitat. To minimize impacts to PBS designated critical habitat, USG will conduct 1:1 on-site reclamation as specified in the Mining and Reclamation Plan for all project disturbance areas. Additionally, USG will acquire or set aside an area of designated critical habitat away from the Quarry's operations for long-term wildlife habitat conservation, to minimize the loss of designated critical habitat within the Quarry. The habitat acquisition measure will be applicable for public lands directly affected by the Proposed Action. The acquired lands will consist of native desert vegetation within designated PBS critical habitat. Acquisition lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM and Wildlife Agencies.	Prior to and throughout project implementation	Permittee; BLM; USFWS; CDFW	BLM; USFWS; CDFW review and approval	
Mitigation Measure 3.4-11: PBS Monitoring and Reporting. USG will support the CDFW PBS monitoring and reporting program within the federal action area by funding the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed upon by USG, BLM, and CDFW. Implementation of this measure, combined with the other measures provided in this SEIR, will reduce impacts to PBS to a less than significant level; however, additional mitigation measures may be required through the regulatory permit process.	Upon project approval	Permittee	BLM and CDFW	
Mitigation Measure 3.4-12: PBS Avoidance and Minimization. USG will implement the following measures throughout the life of the project. • New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the Wildlife Agencies.	Throughout disturbance of previously undisturbed areas	Permittee or its contractor(s)	Imperial County Planning and Development Services; CDFW and USFWS	
• Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	

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MITIGATION MEASURES	**Timing**	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
• The Designated Biologist or Biological Monitor will be on-site during any Quarry expansion activities or other new ground-disturbing activities and will walk the perimeter of the Quarry expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.	Throughout disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist retained by Permittee	Imperial County Planning and Development Services	
• If a PBS enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• Fencing installed anywhere within the Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to PBS.	Throughout project implementation	Permittee or its contractor(s)	BLM and USFWS review and approval	
• When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).	Throughout project implementation	Permittee or its contractor(s)	Imperial County Planning and Development Services	
• In consultation with BLM, CDFW, and USFWS, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought.	Throughout project implementation	Permittee or its contractor(s)	BLM, CDFW, AND USFWS consultation	
Mitigation Measure 3.4-13. Future Quarry Phasing Notification and Review. USG will notify the BLM, CDFW, and USFWS 90 days prior to initiating future mining activities in the four phases nearest to the highest PBS occurrence and habitat connectivity areas (phases 6Bp, 7Bp, 8, and 9). Upon notification, the agencies will coordinate with USG to review PBS occurrence and activity in the vicinity obtained during the intervening years, as well as relevant documentation of Nelson's bighorn sheep behavior near other mining operations. PBS avoidance and minimization measures may be revised as needed to conform to new information.	90 days prior to initiating mining activities in project phases 6Bp, 7Bp, 8, and 9	Permittee or its contractor(s)	BLM, CDFW, USFWS review	

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Mitigation Measure 4.2-2a: Minimize Temporary Use Areas: During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed for immediate use.	Throughout pipeline construction activities	Permittee or its contractor(s)	Imperial County Planning and Development Services	
Mitigation Measure 4.2-2b: Wildlife Avoidance and Minimization Measures—Viking Ranch Restoration Site To avoid impacts to common and special-status wildlife on the Viking Ranch Restoration site, the following measures shall be implemented during restoration activities: • The clearing of vegetation and other initial site disturbance shall occur outside of the bird nesting season. Grading shall take place between September 1 and March 1. If grading must occur during the nesting season, a qualified wildlife biologist and biological monitor shall conduct a nesting bird survey prior to clearing work. If an active nest is found it shall be protected in place with a work-free buffer with a radius determined by the biologist in consultation with the CDFW.	Throughout disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist retained by Permittee	San Diego County Planning and Development Services; BLM, USFWS, CDFW	
• Preconstruction surveys for San Diego black-tailed jack and/or active burrows shall be conducted by a qualified biologist prior to initiating restoration activities on the site. If any individuals are observed in a burrow or shelter form, they will be allowed to leave the area on their own accord. Once the burrow is determined clear of rabbits, a qualified biologist shall collapse the burrow or shelter form.	Prior to disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist retained by Permittee	San Diego County Planning and Development Services	
• Speed limits on all access roads shall not exceed 15 miles per hour.	Throughout project implementation	Permittee or its contractor(s)	San Diego County Planning and Development Services	
• Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.	Throughout project implementation	Permittee or its contractor(s)	San Diego County Planning and Development Services	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	Responsibility	Monitoring Method	Verification [Name/Date]
• The boundaries of all areas to be newly disturbed (including areas proposed for clearing and grading, access roads, staging and equipment storage areas) shall be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment shall be confined to the flagged area. The biological monitor shall be onsite to ensure that no ground disturbing activities occur outside of the flagged area during vegetation clearing, grading, or other ground disturbing activities.	Prior to and throughout disturbance of previously undisturbed areas	Permittee or its contractor(s); Qualified biologist retained by Permittee	San Diego County Planning and Development Services	
• No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight.	Throughout project implementation	Permittee or its contractor(s)	San Diego County Planning and Development Services	
• To avoid wildlife entrapment all pipes and other construction materials and supplies shall be covered or capped in storage areas, and at the end of each workday. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.	Throughout project implementation	Permittee or its contractor(s)	San Diego County Planning and Development Services	
• To avoid wildlife attractants, all trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater shall be avoided or removed to avoid attracting wildlife.	Throughout project implementation	Permittee or its contractor(s)	San Diego County Planning and Development Services	
• Any injured or dead wildlife encountered during site restoration or monitoring shall be reported to the project biologist, biological monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the project biologist or biological monitor shall notify the USFWS and/or CDFW as appropriate, within 24 hours of the discovery.	Throughout project implementation	Permittee or its contractor(s); Qualified biologist retrained by Permittee	San Diego County Planning and Development Services; USFWS and/or CDFW	
Mitigation Measure 4.2-2c: Assessment of Biological Resources: Prior to construction activities for Quarry Well No. 3, the associated pipeline, and Viking Ranch, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the construction footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code Section 3511), will be completed. Species to	Prior to initiating construction of Well No. 3 and pipeline and restoration of Viking Ranch site	Permittee; Qualified biologist retained by Permittee; CDFW	San Diego and Imperial Counties consultation with CDFW.	

	IMPLEMENTATION PROCESS			
MITIGATION MEASURES	**Timing**	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
be addressed should include all “endangered, rare or threatened species” as defined in CEQA Guidelines Section 15380. The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.				
Mitigation Measure 4.2-3: Lake and Streambed Alteration Program: Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under Section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code Section 1602 resources associated with the Project.	Prior to issuance of grading permit and/or initiation of construction activities	Permittee	CDFW Lake and Streambed Alteration Program	
CULTURAL RESOURCES				
Mitigation Measure 3.8-3: If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented.	Throughout project implementation	Permittee or its contractor(s); Qualified archaeologist retained by Permittee	Imperial County Planning and Development Services	
Mitigation Measure 3.6-1: Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Project APE will be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. It will describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from Project impacts. It will also detail the procedures	Prior to project implementation and throughout project implementation	Permittee or its contractor(s); Qualified archaeologist retained by Permittee	Imperial County Planning and Development Services	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during Project implementation.				
Mitigation Measure 3.6-2: Develop a Maintenance Notification Agreement for Future Maintenance of Pipeline Rights-of-Way. A Maintenance Notification Agreement will be outlined prior to the authorization of any pipeline right-of-way grant to ensure continued avoidance of archaeological resources during the life of the grant. This agreement will identify the schedule and data needs that will be submitted by USG to BLM when maintenance is needed on any of the pipelines authorized for this project. The BLM archaeologist will review this data to determine if and where archaeological monitors are needed during future maintenance activities.	Prior to authorization of pipeline right-of-way from BLM; throughout project implementation	Permittee or its contractor(s); BLM	BLM review	
Mitigation Measure 4.3-1: Develop and Implement a Plan for Archaeological Monitoring, Post-Review Discovery, and Unanticipated Effects. Avoidance and protection measures for cultural resources within the Viking Ranch APE shall be outlined in a Construction Monitoring and Inadvertent Discovery Plan. This Plan will be prepared and approved prior to the implementation of any of the action alternatives. The Plan shall describe worker awareness training, avoidance measures, and monitoring procedures that will be implemented to protect known cultural resources from project impacts. It shall also detail the procedures that will be used to assess, manage, and mitigate potential impacts on inadvertent discoveries during project implementation.	Prior to project implementation and throughout project implementation	Permittee or its contractor(s); Qualified archaeologist retained by Permittee	San Diego County Planning and Development Services	
Mitigation Measure 4.3-2: Inadvertent Discovery of Unmarked Burials. If human remains are uncovered during project activities, the project operator shall immediately halt work within 50 feet of the find, contact the Imperial County Coroner to evaluate the remains, and follow the procedures and protocols set forth in CEQA Guidelines Section 15064.5(e). If the County Coroner determines that the remains are Native American in origin, the Native American Heritage Commission (NAHC) will be notified, in accordance with Health and Safety Code Section 7050.5(c) and Public Resources Code (PRC) 5097.98 (as amended by Assembly Bill 2641). The NAHC shall designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, and designate a Most Likely Descendent (MLD) for the remains per PRC Section 5097.98, with the MDL regarding their recommendations for the disposition of the remains, taking into account the possibility of multiple human remains.	Throughout project implementation	Permittee or its contractor(s); Imperial County Coroner; Native American Heritage Commission (NAHC)	Compliance with existing state regulations	

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES				
Mitigation Measure 3.2-1a: Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet.	Throughout project construction phases	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 3.2-1b: Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.	Throughout project construction phases	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 3.2-1c: Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.	Prior to completion of reclamation activities	Permittee or its contractor(s)	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 3.2-3: Once the pipeline alignment is located and staked, a pre-construction pedestrian field survey is recommended in order to locate any surficial fossil localities and verify the geologic units underlying the area associated with the Proposed Action. For any areas where potential resources cannot be avoided by the pipeline construction, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) should be prepared and implemented by a BLM-permitted paleontologist and approved by the BLM and Imperial County.	Prior to initiating pipeline construction	Permittee; BLM-permitted paleontologist, BLM, Imperial County	Imperial County Planning and Development Services periodic inspections	
Mitigation Measure 4.4-1: Pre-construction pedestrian field surveys shall be conducted throughout the proposed areas of disturbance for the Well No. 3 site, the final pipeline alignment, and the Viking Ranch site to locate any surficial fossil localities and verify the underlying geologic units. For any areas where potential resources are identified in a preconstruction field survey and cannot be avoided by proposed construction activities, a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) shall be prepared and implemented by a qualified paleontologist and approved by Imperial County.	Prior to and throughout project implementation	Permittee or its contractor(s); Qualified paleontologist retained by Permittee	Imperial County Planning and Development Services	
GREENHOUSE GAS EMISSIONS				
See Air Quality				

MITIGATION MEASURES	IMPLEMENTATION PROCESS			
	Timing	**Responsibility**	**Monitoring Method**	**Verification [Name/Date]**
Mitigation Measure 1: USG has already acquired approximately $1.6 million in emission credits for the Project to meet applicable air quality standards. Similarly, to the extent necessary, USG will acquire recognized carbon credits to offset the project's increased GHG emissions.	Prior to project implementation	Permittee; CARB	Imperial County Planning and Development Services	
HYDROLOGY & WATER QUALITY				
Mitigation Measure 3.3-7: An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.	This measure has been successfully implemented by the Permittee	Not applicable.	Not applicable.	Not applicable.
TRIBAL CULTURAL RESOURCES				
See Cultural Resources				

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ATTACHMENT 1

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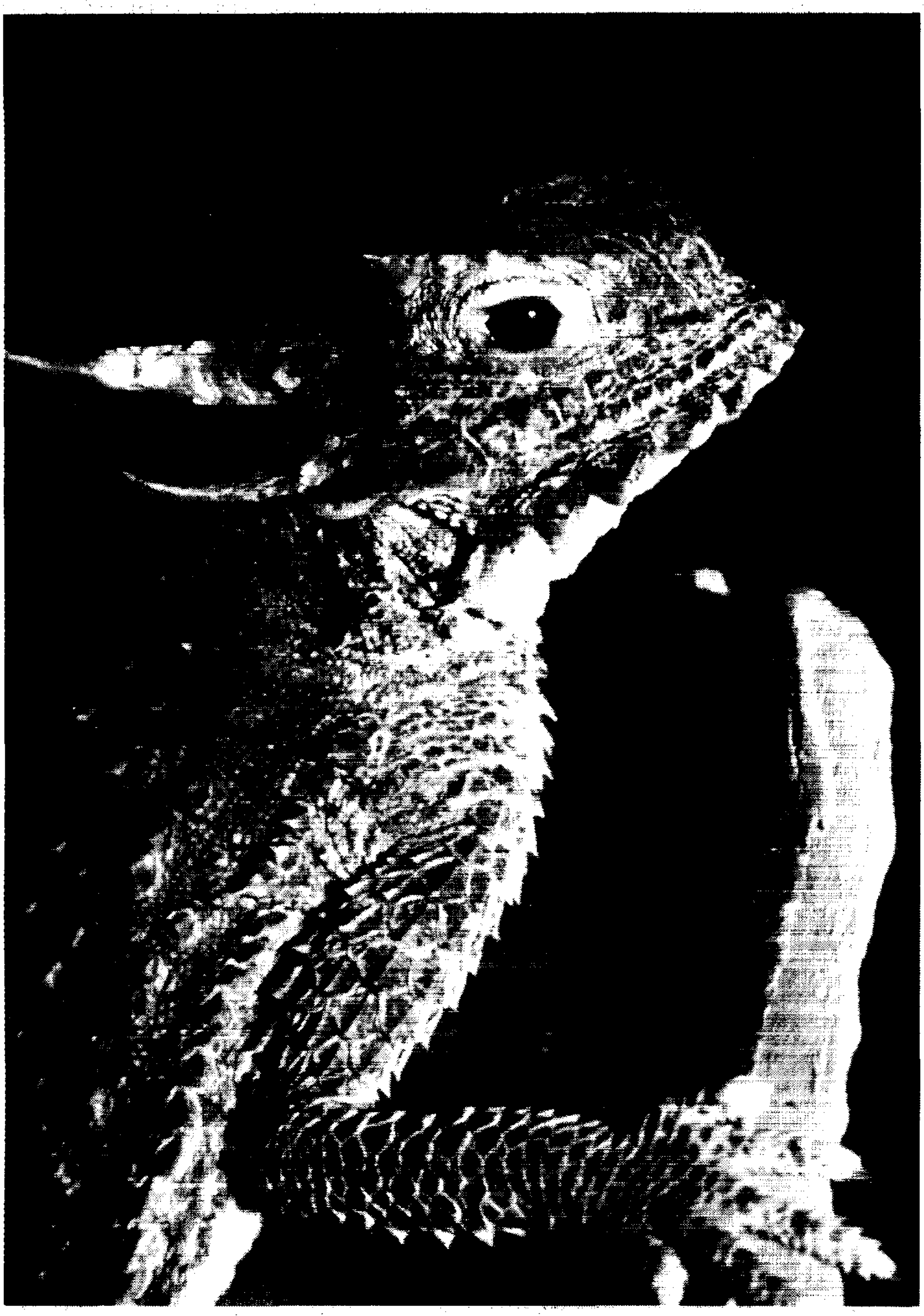
Working Group of
Flat-tailed Horned Lizard
Interagency Coordinating Committee

Flat-tailed Horned Lizard Rangewide Management Strategy



An Arizona - California Coservation Strategy

May 1997

Flat-tailed Horned Lizard Rangewide Management Strategy

Prepared by

Flat-tailed Horned Lizard
Working Group of
Interagency Coordinating Committee

Edited by

Larry D. Foreman

May 1997

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APPENDICES

Executive Summary

The Flat-tailed Horned Lizard Rangewide Management Strategy has been prepared to provide guidance for the conservation and management of sufficient habitat to maintain viable populations of flat-tailed horned lizards (*Phrynosoma mcallii*). The species is found only in southwestern Arizona, southeastern California, and adjacent portions of Sonora and Baja California Norte, Mexico.

The species was proposed for listing as a threatened species by the U. S. Fish and Wildlife Service (USFWS) on November 29, 1993. Human activities have resulted in the conversion of roughly 34 percent of the historic habitat of the flat-tailed horned lizard to other uses, such as agriculture and urban development. Evidence suggests that populations of this species have declined in some of the remaining habitat areas.

The Rangewide Management Strategy calls for the establishment of five flat-tailed horned lizard management areas - four in California and one in Arizona. Surface disturbing activities would be limited in these areas. Land alterations outside of these management areas would not be restricted, but special mitigation and compensation measures would be applied. In addition, one research area is proposed, where research is encouraged. Local agencies and private landowners are encouraged to establish one additional management area in the Coachella Valley in California.

The Rangewide Management Strategy was prepared by representatives from Federal, state, and local governments. It is designed to be used as the basis for a conservation agreement among the agencies. Signatory agencies will incorporate measures in the Rangewide Strategy into their land management plans. Compliance with the National Environmental Policy Act and state counterparts will be achieved through these management plans or revisions. The planned actions in the Rangewide Management Strategy are organized in a step-down format used by the USFWS in recovery plans.

Recommended Citation:

Foreman, L. D. (Ed.) 1997. Flat-tailed horned lizard rangewide management strategy. Report of interagency working group. 61pp. plus appendices.

Introduction

Description of Species

Taxonomy

The flat-tailed horned lizard was first described by Hallowell in 1852 as *Anota mcallii* after U.S. Army Colonel George A. M'Call who collected the first type specimen (Johnson and Spicer 1985). Due to the lack of external ear openings, the flat-tailed horned lizard was initially placed in a separate genus (*Anota*) from other horned lizards (Johnson and Spicer 1985). Norris and Lowe (1951) decided that similarities of *mcallii* to other horned lizards were greater than its differences and placed it into the genus *Phrynosoma*. No subspecies of flat-tailed horned lizard (*Phrynosoma mcallii*) have been described (Funk 1981).

Field Characters

The flat-tailed horned lizard has the typical flattened body shape of horned lizards. It is distinguished from other species in its genus by its dark vertebral stripe; lack of external ear openings; long, broad and flattened tail; and comparatively long spines on the head (Funk 1981). The flat-tailed horned lizard has two rows of fringed scales on each side of its body. The species is cryptic in color, ranging from pale gray to light rust brown dorsally, and white or cream (unspotted) ventrally with a prominent umbilical scar. The only apparent external difference between males and females is the presence of enlarged postanal scales in males. Maximum snout-vent length for the species is 8.4 cm (Muth and Fisher 1992), while of hatchlings range from 3.0 to 3.8 cm (Johnson and Spicer 1985).

The only other horned lizard known to be sympatric with the flat-tailed horned lizard is the desert horned lizard (*Phrynosoma platyrhinos*). The latter is distinguished from the flat-tailed horned lizard by a combination of characters including absence of a dark vertebral stripe, an exposed tympanum, a spotted ventral surface in most individuals, a single row of fringed scales, and a narrower and less flattened tail. Apparent hybrids between the two species, exhibiting a mix of morphological characteristics, have been observed in the vicinity of Ocotillo, California (Stebbins 1985).

Listing History

In California, the flat-tailed horned lizard was designated a sensitive species by the Bureau of Land Management (BLM) in 1980 (BLM 1980). The purpose of the designation was to provide increased management attention to prevent population declines and habitat loss or degradation that might result in Federal or State listing as endangered or threatened. The designation raises the level of concern for flat-tailed horned lizards in the environmental review process and in land use planning. No specific habitat or population protection measure or review process is required or prohibited by the sensitive species designation. By present BLM policy, species designated sensitive are, at a minimum, afforded the protection provided candidate species (BLM 1988). This includes direction to 1) determine distribution, abundance, and population status, 2) develop a habitat management program, and 3) coordinate with the USFWS (BLM 1988).

On January 25, 1988, the California Fish and Game Commission received a petition requesting listing of the flat-tailed horned lizard as an endangered species. On May 13, 1988, the Commission accepted the petition and designated the flat-tailed horned lizard a candidate species. The California Department of Fish and Game (CDFG) reviewed the petition and other information; the CDFG recommended in its review (Bolster and Nicol 1989) that the species be listed as threatened. On June 22, 1989, the Commission voted against the proposed listing.

The Arizona Game and Fish Department (AGFD) currently has the flat-tailed horned lizard on its list of wildlife of special concern (AGFD, in prep). This designation affords no legal protection to the species, but is used in planning to encourage habitat conservation and management consideration. Collection of flat-tailed horned lizards is prohibited in both Arizona and California, except by special permit.

The USFWS included the flat-tailed horned lizard as a Category 2 candidate for listing as a threatened or endangered species in its original "Review of Vertebrate Wildlife" published in the *Federal Register*, December 10, 1982 (USFWS 1982). Category 2 candidate species were those for which data in the USFWS possession indicate that listing may be appropriate, but additional information is needed to support a proposed rule. In a 1985 revision of the candidate list, the species was retained as a Category 2 candidate (USFWS 1985). Due to new data (especially Carlson and Mayhew 1988, Olech undated, and Rorabaugh *et al.* 1987), the USFWS elevated the flat-tailed horned lizard to a Category 1 candidate in its revised list issued on January 6, 1989 (USFWS 1989). Category 1 candidate species were those for which the USFWS had sufficient information to support a proposal to list them as threatened or endangered.

On November 29, 1993, the USFWS published a proposed rule to list the flat-tailed horned lizard as a threatened species (USFWS 1993). The USFWS cited "documented and anticipated population declines associated with widespread habitat loss, fragmentation, and degradation due to human activities such as agricultural developments, urban expansion, off-highway vehicle use, energy developments, and military activities" as the primary bases for the proposed listing. The USFWS found that critical habitat was not determinable at that time. A public meeting was held in El Centro on March 22, 1994, to gather public comment. At this time, no final rule on the proposed listing has been issued.

The Mexican Government has designated the flat-tailed horned lizard a threatened species. As such, the species is protected from collection, sale, and commerce, and its habitat is afforded special protection (Secretaria de Desarrollo Social 1994).

Distribution

The flat-tailed horned lizard is found in the extreme southwestern corner of Arizona, the southeastern corner of California, and adjoining portions of Sonora and Baja California, Mexico (Figure 1). In Arizona, the flat-tailed horned lizard is found in southern Yuma County, primarily south of Interstate 8 and west of the Gila Mountains. Estimates of suitable habitat in Arizona have ranged from 135,900 to 176,000 acres (Johnson and Spicer 1985, Rorabaugh *et al.* 1987, Hodges 1995). Suitable habitat is found east and south of the City of Yuma outside of the Colorado River floodplain and adjoining croplands. Lands within the range of the flat-tailed horned lizard in Arizona include Federal lands administered by the Marine Corps Air Station at Yuma, the BLM, and the Bureau of Reclamation (BR); State of Arizona lands; and private lands. The majority of the flat-tailed horned lizard's range in Arizona is on the Barry M. Goldwater Range.

The flat-tailed horned lizard is found in California in portions of eastern San Diego County, central Riverside County, and Imperial County. The majority of the habitat for the species is in Imperial County (Turner *et al.* 1980). The range of the flat-tailed horned lizard encompasses approximately 1,800,000 acres in California (Bolster and Nicol 1989, Rado 1981); however, much of the land within this range is unsuitable, including the Salton Sea and other habitats not used by the species, such as urban and agricultural areas. Areas identified as especially important to the species in California encompass approximately 210,000 acres and are found primarily in four regions (Rado 1981, Turner *et al.* 1980). The El Centro Resource Area (BLM, California Desert District) administers three of these areas: West Mesa, East Mesa, and Yuha Desert. Portions of West Mesa and East Mesa are jointly managed by the BLM and the U. S. Navy. The BR has withdrawn a large portion of these areas. The California Department of Parks and Recreation (CDPR) manages much a fourth area in California, including Ocotillo Wells State Off-Highway Vehicle Area (Ocotillo Wells SVRA) and a portion of Anza-Borrego Desert State Park.

About 29 percent of the range of the flat-tailed horned lizard is in Mexico. In Baja California Norte, the range extends from the International Border west of Mexicali south to Laguna Salada. In Sonora the species has been found in the sandy plains immediately south of and contiguous with habitat in Arizona, and east through the Pinacate Region to the sandy plains around Puerto Penasco and Bahia de San Jorge (Johnson and Spicer 1985, Gonzales-Romero and Alvarez-Cardenas 1989). The flat-tailed horned lizard is probably absent from the volcanic areas in the Pinacate Region and the dune fields of the Gran Desierto. Records from Sonora Highway 2,

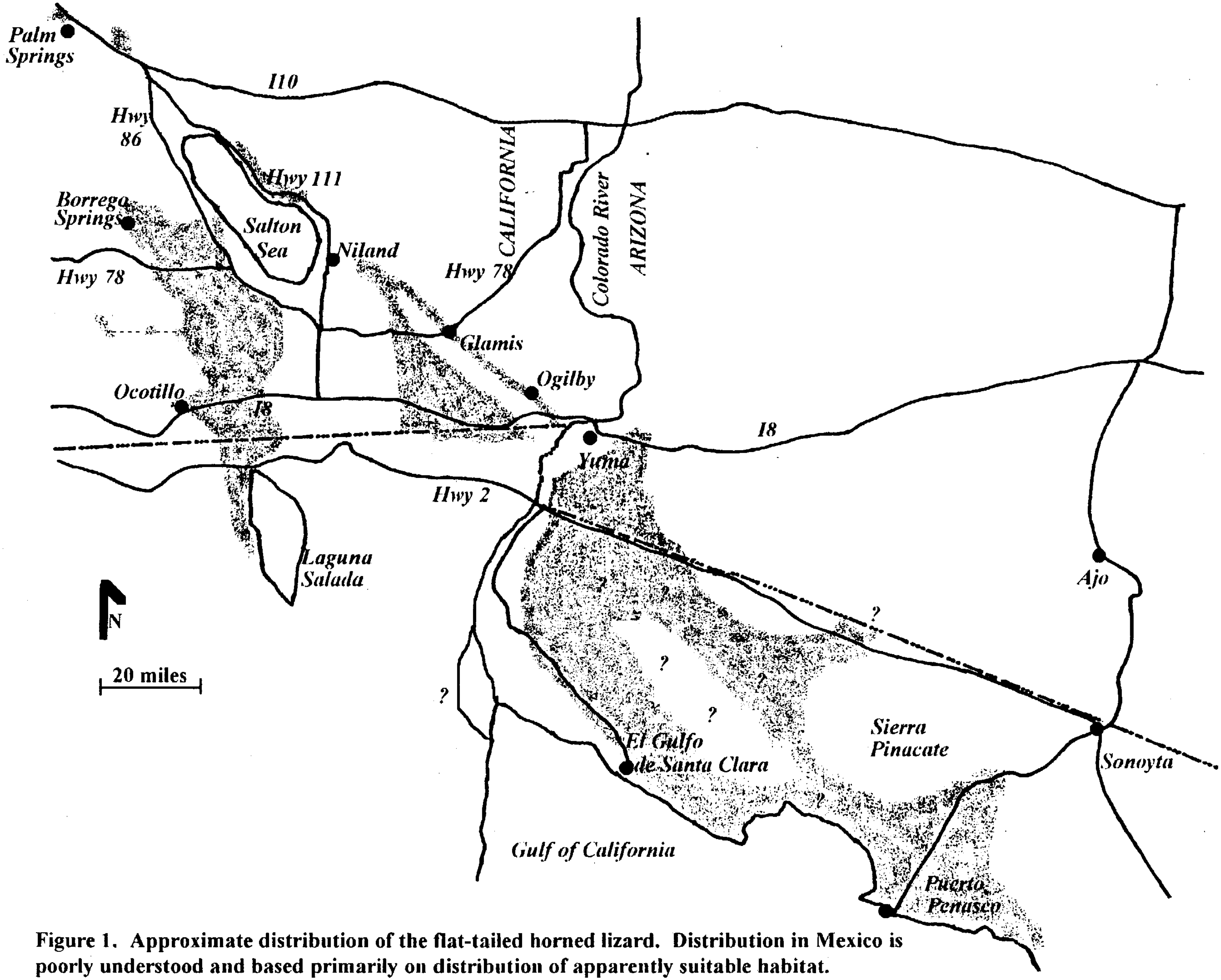

Figure 1. Approximate distribution of the flat-tailed horned lizard. Distribution in Mexico is poorly understood and based primarily on distribution of apparently suitable habitat.

just south of the International Boundary, suggest the species might be present in the area of Pinta Sands on the Cabeza Prieta National Wildlife Refuge.

Life History

Habitat Use

Flat-tailed horned lizards occur entirely within the Lower Colorado River Valley Subdivision of Sonoran Desert Scrub (Turner and Brown 1982). This is the largest and most arid subdivision of the Sonoran Desert. Annual precipitation varies from 5.8 cm at El Centro, California to 13.5 cm at Palm Springs. Summer temperatures range from 30 to 45°C.

Most records for flat-tailed horned lizards come from the creosote (*Larrea tridentata*)-white bursage (*Ambrosia dumosa*) series of Sonoran desertscrub (Turner and Brown 1982). It is this open community in association with sandy flats and valleys that is often described as flat-tailed horned lizard habitat (Stebbins 1985, Turner and Medica 1982, Rorabaugh *et al.* 1987). Although most records for the species are from sandy flats or areas with a veneer of fine, windblown sand, the flat-tailed horned lizard has also been collected or observed in areas with little or no windblown sand, such as badlands in the Yuha Basin and the Borrego Valley, and on saltbush flats at the northeastern end of the Salton Sea (Turner *et al.* 1980; Wone and Beauchamp 1995a). The species has also been recorded in the mixed scrub series of Sonoran desertscrub (Turner and Brown 1982), on gravelly soils in Anza-Borrego Desert State Park, and in association with senita cactus (*Lophocereus schottii*) in Sonora. Flat-tailed horned lizards are probably rare in the unvegetated portions of major dune systems, such as the Algodones Dunes and the dunes of the Gran Desierto (Luckenbach and Bury 1983, McCalvin 1993).

In California, the species has been recorded in a comparatively broad range of habitats, including sandy flats and hills, badlands, salt flats, and gravelly soils. In Arizona, the species is apparently restricted to sandy and hardpan flats. This may be due to habitat availability. In Arizona, the presence of big galleta grass (*Hilaria rigida*) was correlated with flat-tailed horned lizard abundance and may be an important vegetation component of its habitat (Rorabaugh *et al.* 1987). However, big galleta grass is not present in many high density flat-tailed horned lizard areas in California (Turner and Medica 1982; Rorabaugh *et al.* 1987). In California, Muth and Fisher (1992) found both white bursage (*Ambrosia dumosa*) and indigo bush (*Dalea emoryi*) were preferred by flat-tailed horned lizards, presumably because of their ability to trap wind-blown sand and provide shade for thermal cover.

The desert horned lizard is the only other horned lizard known to occur sympatrically with the flat-tailed horned lizard. Subtle differences have been described in preferred microhabitat use by both species in close proximity. Rorabaugh *et al.* (1987) characterized desert horned lizard habitat as gently sloping alluvial terrain dominated by washes vegetated with small trees such as palo verde (*Cercidium microphyllum*) and ironwood (*Olneya tesota*). As described previously, flat-tailed horned lizard habitat in the near proximity was described as consisting of finer sand, more level and unbroken terrain, and sparse creosotebush-bursage vegetation.

Food Habits

Ants constituted 97 percent of the prey items in flat-tailed horned lizard scats examined by Pianka and Parker (1975) and Turner and Medica (1982). The percentage of ants in their diet is greater than other horned lizards (Pianka and Parker 1975). The most important ant species are harvester ants in the genera *Messor* and *Pogonomyrmex* (Turner and Medica 1982). Studies in California (Turner and Medica 1982) and Arizona (Turner and Medica 1982; Rorabaugh *et al.* 1987) showed positive correlations between flat-tailed horned lizard scat abundance and harvester ant nests.

Like other carnivorous desert lizards, flat-tailed horned lizards primarily use preformed water (water found in their food) to maintain proper water balance (Schmidt-Nielsen 1964). Free-standing water is not usually available in flat-tailed horned lizard habitat. Dew, which is used as a water source by lizards in other climates, is uncommon in southwestern deserts. It normally occurs at cool temperatures and evaporates before lizards become active enough to use it (Schmidt-Nielsen 1964). The use of free water by flat-tailed horned lizards is debatable. Mayhew (1968) states that flat-tailed horned lizards have never been seen drinking water in the wild or in captivity. However, Johnson and Spicer (1985) witnessed a captive flat-tailed horned lizard drinking water that was sprayed on it.

Reproduction

Flat-tailed horned lizards are oviparous and early maturing, and they can produce multiple clutches (Howard 1974). Two cohorts of hatchlings may be produced each year, in late July and in September (Muth and Fisher 1992). Hatchlings from the first cohort in July may reach sexual maturity after their first winter season, whereas hatchlings born later may require an additional growing season to mature (Howard 1974).

Compared to most other horned lizards, flat-tailed horned lizards produce relatively small egg clutches [mean clutch size of about 5, range of 3 to 7 (Howard 1974, Pianka and Parker 1975)]. Howard (1974) developed a productivity index as a product of the number of egg clutches per year and the average number of eggs per clutch. The flat-tailed horned lizard productivity ranked the lowest among the horned lizards studied followed by the desert horned lizard. Howard (1974) suspected that very high temperatures and high aridity experienced by both species resulted in their lower reproductive potential. A sex ratio of 1:1 (males:females) was documented in populations in California (Turner and Medica 1982, Muth and Fisher 1992).

Behavior

Unlike other iguanid lizards, which often flee when approached, flat-tailed horned lizards generally remain still (Wone and Beauchamp 1995a) or may even bury themselves in the loose sand (Norris 1949). This reluctance to move when disturbed, together with cryptic coloration and flattening of the body, makes them very difficult to locate in the field.

Flat-tailed horned lizards studied by Muth and Fisher (1992) spent 54 percent of the day in some form of movement. Most activity occurred throughout the mid-day in spring and fall. As summer temperatures increase, flat-tailed horned lizards shift to two activity periods, morning and evening (Mayhew 1968).

During the active season, flat-tailed horned lizards spend the night just beneath the surface of the sand, in burrows, or on the surface (Klauber 1939, Smith 1946, Muth and Fisher 1992). At least some individuals escape extreme surface temperatures during the day by retreating to burrows they have excavated (Rorabaugh 1994). The availability of burrows, or soils friable enough for burrow construction to a depth of 10 cm, may be necessary for flat-tailed horned lizards to escape extreme temperatures (Muth and Fisher 1992, Rorabaugh 1994).

Adult flat-tailed horned lizards are obligatory hibernators; torpor cannot be prevented in winter under normal laboratory conditions (Mayhew 1968). Mayhew (1965) suspected that reduced food availability, as well as decreasing photoperiod and lower metabolic rate resulting from reduced temperature is the hibernation triggering mechanism. Adults cease eating in the fall regardless of temperature and will starve if prevented from hibernating. Winter dormancy for flat-tailed horned lizards in California began in mid-November and continued until mid-February (Muth and Fisher 1992). Mayhew (1965) found the majority of adult flat-tailed horned lizards hibernated in burrows they had dug within 5 cm of the surface. All winter-dormant flat-tailed horned lizards found by Muth and Fisher (1992) were within 10 cm of the surface.

At least some juveniles are active during the winter (Muth and Fisher 1992). Winter activity may allow juveniles to continue growing through winter and reach reproductive maturity at an earlier age (Howard 1974, Smith and Ballinger 1994). Whereas adults may be able to make metabolic adjustments for hibernation, juveniles may have to remain active so their fat reserves can be supplemented throughout winter (Muth and Fisher 1992). The smaller body size of the juveniles would allow them to reach a preferred body temperature on warm winter days quicker than the larger adults (Schmidt-Nielsen 1964).

Flat-tailed horned lizards have unusually large home ranges for lizards their size. At a West Mesa study site, the mean home range size for all flat-tailed horned lizards with more than 18 recaptures was 6.7 ac. (Muth and Fisher 1992). At a site in the Yuha Desert, Turner and Medica (1982) estimated home ranges of 0.32 ac. and 0.12 ac. for male and female flat-tailed horned lizards, respectively. However, the small size of the Yuha Desert study plot (10.1 ac.) combined with relatively few recaptures and a relatively short study period likely resulted in an underestimate of home range size.

Population Dynamics

No definitive data exist on population dynamics. However, information from scat counts (Rorabaugh 1994) and the studies of Muth and Fisher (1992) suggest that densities fluctuate greatly and that these fluctuations may be associated with winter/spring precipitation and production of annual plants in the spring. This pattern is true for other desert lizards (see Mayhew 1967, Hoddenbach and Turner 1968, Parker and Pianka 1975, and others.)

Flat-tailed horned lizard populations may fluctuate in response to prey availability. Harvester ant population sizes fluctuate with the availability of seeds, which are correlated with the amount and timing of precipitation (Beatley 1967, Brown *et al.* 1979). Harvester ants rely on seed storage during periods of climatic stress, thus decreasing their availability as a food source for flat-tailed horned lizards during periods of low precipitation (Brown *et al.* 1979).

Population Viability Analysis - The Flat-tailed Horned Lizard Conservation Team (see Appendix 6) has conducted population viability analyses with the simulation models RAMAS and VORTEX. Although not complete at this time, the Team's preliminary work has clarified research needs and has provided some insight into the mechanisms of flat-tailed horned lizard population dynamics. Population variables such as age-specific survivorship, fecundity, and population size; sex ratios; age at first reproduction; density dependence; stochasticity; and other variables are used in the analysis to generate information about population viability, especially extinction risk for specified time intervals.

Ideally, these analyses would define an initial population size and reserve size needed to support a viable population for a specified time interval, such as 100 or 500 years.

Unfortunately, population demographics and stochasticity in possible reserves is not adequately understood to provide this information. However, the Team believes that sufficient data exist to identify variables that are most important in determining population viability. Research should be prioritized to develop accurate estimates of these variables under varying conditions, and management reserves should target altering key variables to enhance population viability.

Preliminary results with RAMAS and VORTEX suggest that population viability is particularly sensitive to changes in mortality rates. Other important variables are fecundity and the effects of environmental stochasticity, such as drought and years with above average precipitation. Fecundity and precipitation are affected minimally by management. However, by reducing activities that result in mortality, directly or indirectly, management within reserves could increase the viability of flat-tailed horned lizard populations. Thus, the preliminary population viability analyses suggest that actions that limit sources of mortality will increase the chances that populations will persist into the future. Preliminary results also highlight the need for accurate estimates of population variables, particularly age-specific clutch size and numbers of clutches produced per female annually; mortality rates, particularly for juvenile lizards; population density; and how population parameters vary over time and with precipitation or annual plant production. Better estimates of population variables would greatly enhance the value of population viability analyses in guiding the management of this species.

Current Management and Conservation of Flat-tailed Horned Lizard Habitat

Federally-administered Lands

Arizona. Title I of the Colorado River Salinity Control Act of 1974 (Public law 93-320) established a 5-mile protective and regulatory groundwater pumping zone 5 miles north of and paralleling the international boundary between Mexico and the United States. This zone, known as the "Five-Mile Zone," is in compliance with Minute 242 of the 1944 Mexican Water Treaty between the United States and Mexico. The BR uses a portion of the zone for a series of water wells and pumps, an under and above ground canal, and a series of settling ponds (Fig. 11). The ponds are used for disposing of saline sludge generated by the Yuma Desalinization Plant.

The passage of the Military Lands Withdrawal Act of 1986 (Public law 99-606) transferred land management responsibilities on the Barry M. Goldwater Range to the BLM. The BLM administers public lands within flat-tailed horned lizard habitat under both the "Yuma

District Resource Management Plan" (BLM 1987a) and the "Lower Gila South Resource Management Plan (Goldwater Amendment)" (BLM 1990), which includes the Goldwater Range. Formerly part of the Lower Gila South Resource Area, this portion of the Goldwater Range is now administered by the BLM's Yuma Field Office.

On the Goldwater Range, flat-tailed horned lizard habitat occurs in portions of three special management areas: 1) the Gran Desierto Dunes Area of Critical Environmental Concern (ACEC); 2) the Yuma Desert and Sand Dunes Habitat Management Area; and 3) the extreme western portion of the Tinajas Altas Mountains ACEC. In these areas, off-highway vehicle use, camping, new rights-of-way, and other land use authorizations are limited.

On public lands outside the Goldwater Range, off-highway vehicle use is limited to existing roads and trails. A route designation map is available from the Range Management Officer, Marine Corps Air Station - Yuma. On the Goldwater Range, off-highway vehicle use is limited to designated roads and trails. For safety reasons, the Marine Corps Air Station, Yuma, issues range passes for visitors to the Goldwater Range. Visitors are restricted to driving street-legal vehicles, which further inhibits off-road travel.

For military activities on the Goldwater Range, the USFWS has prepared a conference report (USFWS 1996a) which provides guidance for activities affecting flat-tailed horned lizard.

California.

In 1980, the Secretary of the Interior signed the California Desert Conservation Area Plan (BLM 1980) prescribing land uses on BLM-administered lands in California. The existing network of designated routes is illustrated on BLM's Desert Access Guides (maps). The Desert Plan established two ACECs to conserve the flat-tailed horned lizard - the Yuha Basin (40,622 acres) and East Mesa ACECs (40,712 acres). The Desert Plan also directed that habitat management plans be written for lands adjacent to these ACECs. Although not designated specifically for the flat-tailed horned lizard, the San Sebastian Marsh/San Felipe Creek ACEC (6,337 acres) and Salt Creek Desert Pupfish/Rail Habitat ACEC (4,288 acres) also contain habitat for the flat-tailed horned lizard. An expansion of the latter, to be renamed Dos Palmas ACEC, to 14,880 acres is currently in review.

In 1981, a combined plan was prepared for the Yuha Basin ACEC (BLM 1981). Specific actions in the plan were designed to protect sensitive cultural and wildlife resources while allowing for mineral material sales, geothermal development, and motorized vehicle competitive events. In 1983, a habitat management plan was prepared for the adjacent Yuha Desert area (BLM 1983). Measures were similar to the Yuha Basin ACEC Plan with additional measures dealing with monitoring of flat-tailed horned lizard population trends, exchanges and acquisitions, and formation of an interagency coordinating committee. In response to indications of declining flat-tailed horned lizard populations and increasing damage to cultural resources due to route proliferation and cross-country vehicle travel in Yuha Basin, the "Yuha Desert Management Plan" (BLM 1985) was prepared. This plan covers both of the previous areas plus several adjacent ACECs and Natural Areas. The plan tightened controls on, but did not eliminate, off-highway vehicle competitive events. Routes of travel were reduced in number. Camping was restricted to a 25-foot corridor along routes of travel. Law enforcement was increased. Other actions dealing with interagency coordination and monitoring of population trends were strengthened. In 1985, the Yuha Basin ACEC was expanded to 63,000 acres.

In 1982, the "Southern East Mesa ACEC Management Plan" (BLM 1982a) and "East Mesa Wildlife Habitat Management Plan" (BLM 1982b) were completed. The two plans covered adjacent areas and included similar measures. Although not previously conducted in East Mesa, competitive events were formally prohibited, but oil and gas leasing and geothermal energy development were allowed. The ACEC is closed to mineral material sales. Inventory and monitoring of flat-tailed horned lizard populations were given a high priority.

In 1986, the "San Sebastian Marsh/San Felipe Creek [ACEC] Management Plan" (BLM 1986a) was signed. Based on scat counts, flat-tailed horned lizards are locally abundant in this ACEC (BLM 1986a). Most measures in the plan were aimed at protecting and enhancing the aquatic and riparian resources. The ACEC is closed to vehicle entry. The ACEC encompasses about 5,100 acres administered by the BLM and about 1,250 acres administered by the CDFG.

The West Mesa ACEC was officially designated in 1986 to protect habitat of the flat-tailed horned lizard, rare plants, and cultural resources. No plan has been written at this time. The ACEC encompasses more than 20,300 acres, including about 1,600 acres of private land.

In the early 1980's, the Coachella Valley Preserve System was established primarily for conservation of the Coachella Valley fringe-toed lizard (*Uma inornata*). Major portions of the preserve system were acquired by the BLM, USFWS, CDFG, CDPR, and The Nature Conservancy. The System consists of three units totaling about 20,114 acres (Coachella Valley Preserve - 17,076 acres; Willow Hole-Edom Hill Preserve - 1,863; and Indian Avenue Preserve - 1,175 acres). About 6,000 acres of the System contain suitable flat-tailed horned lizard habitat. The USFWS holdings were designated the Coachella Valley National Wildlife Refuge System. BLM-administered lands were designated an ACEC in 1993. The CDFG lands were designated an Ecological Reserve. The CDPR manages the adjacent Indio Hills State Park in a manner consistent with the Preserve goals. An interim plan was prepared in 1986 by The Nature Conservancy; it was replaced by an updated, interagency management plan in 1995 (BLM *et al.* 1995). A preserve management team meets quarterly to discuss management activities. No vehicular traffic is allowed.

A habitat management plan for the Algodones Dunes was prepared in 1987 (BLM 1987b). Based on scat counts, flat-tailed horned lizards are present in small numbers, mostly around the periphery of the dunes. The plan focuses on general enhancement and protection of the flora and fauna of the dunes. Most of the dunes north of Highway 78 is designated wilderness; the dune area south of Highway 78 is open to vehicular cross-country travel.

Limited habitat for flat-tailed horned lizard is found in the Dos Palmas/Salt Creek ACEC along the northeastern side of the Salton Sea. Planning for the area is currently underway.

In 1990, the BLM and CDFG signed the "Management Strategy for the Flat-tailed Horned Lizard on Bureau of Land Management Administered Lands within the California Desert Conservation Area" (BLM and CDFG 1990). Habitat categories were defined, and a category map was developed in the plan. A policy and formula were instituted for projects to compensate for lost or degraded habitat. Other management activities to reduce habitat degradation and loss were implemented. Measures implemented through various plans were brought into a species rangewide (California only) context. Among these were the research program, the inventory and monitoring program, interagency coordination, and habitat compensation.

The foundation for an inventory and monitoring program on BLM-administered land was laid in 1978 with surveys conducted on East Mesa, West Mesa, and Yuha Basin (Turner *et al.* 1978). Some monitoring has been conducted every year since then except 1980, 1982, and 1983. Methods have been refined through the years and were standardized in 1990 (BLM and CDFG 1990). Trends on BLM-administered lands have been analyzed periodically (Olech undated, Wright 1993). In addition to BLM-administered lands, inventories of the Navy target areas (Dames & Moore 1995, Rorabaugh 1996a) and Salton Sea Naval Base (Muth and Fisher 1989, Rorabaugh 1996b) have been conducted. Research on Federal lands has been restricted to a few studies on life history (e.g., Norris 1949, Mayhew 1965, Muth and Fisher 1992) and impacts of off-highway vehicles (e.g., Olech 1986).

The Congress has withdrawn two military ranges in California, R-2510 (West Mesa) and R-2512 (East Mesa). The ranges have been withdrawn from all forms of appropriation under public land laws and are reserved for use by the Secretary of the Navy for defense-related purposes. This withdrawal became effective on October 1, 1996, and is in effect for 25 years. Flat-tailed horned lizards occur throughout both of these ranges. Although the ranges are withdrawn from entry for non-military uses, R-2510 is adjacent to an off-highway vehicle open area, and trespass off-highway vehicle activity occurs. R-2512 also has some off-highway vehicle use but to a lesser extent. Land management strategies and responsibilities will be developed through a new memorandum of understanding between BLM and the Department of the Navy.

About 600,000 acres, mostly in Imperial County, were withdrawn by Secretarial orders dating back to the early 1900's for use by the BR in development of the All American Canal, Boulder Canyon, Colorado River Storage, and Yuma Reclamation projects. Lands were withdrawn from settlement, sales, location under the mining laws, and entry. The majority of these withdrawn lands are managed by the BLM under an agreement with the BR signed in 1978. The Federal Land Policy and Management Act of 1976 directed agencies holding withdrawals to work with the BLM to determine which withdrawals were obsolete and should be terminated; agency recommendations were to be submitted to the Department of the Interior for review and approval. In January 1992, recommendations reflecting the coordinated efforts of the BR, BLM, and the Imperial and Coachella Valley Irrigation Districts were submitted to the Department of the Interior. It was recommended that 133,712 acres continue under withdrawal and that withdrawals be terminated on 444,781. Lands released from withdrawal will be covered by the California Desert Conservation Area Plan (BLM 1980). Lands continuing under withdrawal and covered under the earlier agreements will also be managed by the BLM.

State Lands

<u>Arizona</u>. The Arizona State Land Department has not developed a plan for the management of State of Arizona lands within flat-tailed horned lizard habitat. The State Land Department is processing land purchase applications for State of Arizona lands east of Yuma and near San Luis.

<u>California</u>. Lands within Anza-Borrego Desert State Park are managed to conserve native plant and animal communities. Mining, soil removal, grazing, rockhounding, artifact collection, hunting, shooting, and other activities that could cause surface disturbances are prohibited in the park. Flat-tailed horned lizards occur on an estimated 30,000 to 40,000 acres of the Park.

Within the 600,000-acre park, there is a system of primitive roadways about 500 miles in length. No vehicular activity is allowed off these roadways. Violators are cited by patrol rangers; backup is provided by the park's patrol aircraft. Designated roads that might impact sensitive natural or cultural resources can be closed seasonally or permanently by order of the District Superintendent. Off-highway vehicles are prohibited from park roads unless they are licensed for use on highways. This rule essentially excludes use of all-terrain vehicles, quad-runners, high performance two-cycle motorcycles, and most dune buggies.

All animal and plant life within Anza-Borrego Desert State Park is protected. No collection of reptiles is allowed, with the exception of those taken under a scientific collecting permit issued by the park office. Reptile poaching takes place on paved roadways, but usually does not include flat-tailed horned lizards (Anza-Borrego Desert State Park Files, Mark Jorgensen, pers. comm.)

Ocotillo Wells SVRA is a 40,000-acre park managed by the CDPR, Off-Highway Motor Vehicle Recreation Division (OHMVRD). It is mandated to provide off-highway vehicle recreation in a manner to sustain long-term use. As in Anza-Borrego Desert State Park, mining, soil removal, livestock grazing, artifact collecting, hunting, and shooting are prohibited within the SVRA. No collecting of reptiles is allowed except under a scientific collecting permit issued by the CDFG and approved by the SVRA. In 1991, an extensive wildlife survey and habitat protection plan (Kutilek *et al.* 1991) were completed in the SVRA. The presence of flat-tailed horned lizards and the possibility of listing precipitated a study in 1994 (Wone *et al.* 1994) to develop methods for monitoring population trends in the SVRA. In these on-going studies, methods of monitoring of flat-tailed horned lizard population trends on permanent plots in the SVRA and on control plots are being assessed.

Mexico

Lands in El Parque Nacional del Pinacate and at Cerro Pinto and the Sierra del Rosario in Sonora and near the delta of the Colorado River in Sonora and Baja California are in core protection zones of biosphere reserves (Reserva de la Biosfera de El Pinacate y Gran Desierto de Altar and Reserva de la Biosfera del Alto Golfo de California y Delta del Rio Colorado). El Parque Nacional del Pinacate is an area administered by the Mexican government with use restrictions similar to a national park in the United States. However, the boundaries are not well established, and enforcement of regulations is minimal. The Pinacate area is primarily a volcanic zone within which habitat for flat-tailed horned lizards is probably limited to the sandy northern, western, and southern perimeter. Reserva de las Biosfera Alto Golfo includes flat-tailed horned lizard habitat in the vicinity of the Colorado River Delta in Sonora.

Census and Survey Methods

The distribution and relative abundance of flat-tailed horned lizards has been estimated throughout the range of the species in California and Arizona by use of standardized transects in which numbers of flat-tailed horned lizards and their scat are counted and used as an index to relative abundance (Turner and Medica 1982, Rorabaugh *et al.* 1987, Olech undated, BLM and CDFG 1990, Wright 1993). Two critical assumptions of the survey method are 1) flat-tailed horned lizard scat is readily distinguishable from other lizard's scat, and 2) scat and lizard counts are correlated with densities of flat-tailed horned lizards.

The first assumption is largely met by not counting scat less than 5.5 mm in diameter (Muth and Fisher 1992) and not using scat counts to estimate relative density in areas where desert horned lizards occur (desert horned lizard scat is indistinguishable from that of flat-tailed horned lizards) (Turner and Medica 1982). The relationship between scat counts and horned lizard density has never been examined, but recent work suggests that if these variables are correlated, the relationship may be weak, particularly in the case of small data sets (Muth and Fisher 1992, Rorabaugh 1994). Wright found a correlation between counts of flat-tailed horned lizards and scat; however, the relationship between lizard counts and relative abundance is unknown. Use of lizard count data to estimate relative density is suspect due to the infrequency with which flat-tailed horned lizards are observed on transects (i.e., on average less than 1 animal per 10 hours of searching)(Turner and Medica 1982, Rorabaugh *et al.* 1987) and because environmental conditions are likely to influence flat-tailed horned lizard activity and detectability.

Scat counts have also been used to estimate trends in flat-tailed horned lizard relative abundance (Olech undated, Wright 1993). High scat and flat-tailed horned lizard counts have been consistently recorded from West Mesa, Yuha Basin, near Ocotillo Wells, southern East Mesa, and the Yuma Desert (Rorabaugh *et al.* 1987, Wright 1993). These areas are also where flat-tailed horned lizards are most commonly observed. Scat counts in the same area may fluctuate greatly from year to year (Wright 1993, Rorabaugh 1994); however, mean annual counts in the Yuha Basin declined significantly from 1979 to 1993 (Wright 1993). No statistically significant trends have been detected in either southern East Mesa and West Mesa (Wright 1993). Trend data are not available for the Ocotillo Wells area or the Yuma Desert. Controlled experiments in which scat and flat-tailed horned lizard counts are conducted in areas of known flat-tailed horned lizard density are needed to evaluate the value of using transect data to estimate relative abundance and population trends.

Survey work, analyses of population demographics, and development of survey techniques is ongoing at the Ocotillo Wells SVRA (Wone *et al.* 1994, Wone *et al.* 1995, Wone and Beauchamp 1995a, 1995b). Studies funded by Department of Defense and conducted by Utah State University were initiated in 1995 on the Goldwater Range. The goals are to develop a survey protocol, determine methods for estimating population density, quantify demographics and behavior, and identify effective capture techniques.

Threats

From the historic range in Mexico and the United States, the flat-tailed horned lizard has lost approximately 34 percent of its original habitat (Johnson and Spicer 1985, Rado 1981). In the U.S., the filling of the Salton Sea from 1905 through 1907 and the periodic inundation of the Laguna Salada have removed about 320,000 acres of habitat. Rado (1981) estimated that about 315,000 acres of habitat in California had been lost to agricultural development and support facilities such as aqueducts and canals. In addition, about 83,000 acres of the original range of the flat-tailed horned lizard in California and about 16,000 acres in Arizona have been converted to urban use. Additional unknown acreage has been degraded due to utility lines, geothermal development, sand and gravel mining, off-highway vehicle use, waste disposal sites, military activities, Border Patrol activities, and roads. In remaining habitat areas, evidence suggests that populations of flat-tailed horned lizards have declined in the Yuha Basin and northern East Mesa (Wright 1993, USFWS 1993).

In Sonora less than 10 percent of the habitat has been converted to agricultural, urban, or other uses. In Baja California Norte, considerable habitat loss has occurred in the Mexicali Valley where urban and agricultural development extends from Mexicali to the Colorado River.

Several aspects of the ecology and behavior of the flat-tailed horned lizard contribute to the species' sensitivity to habitat loss and degradation. Among these are the following: 1) the flat-tailed horned lizard is distributed over a relatively small area (Figure 1); 2) relatively low clutch size may limit the ability of lizard populations to recover from declines; 3) the large home range of the flat-tailed horned lizard means that surface-disturbing activities may affect lizard populations for relatively great distances from project sites; 4) flat-tailed horned lizards often freeze in response to danger, which makes them susceptible to mortality on roads and in other areas of activity; and 5) flat-tailed horned lizards are found in valleys and flats where the majority of residential and agricultural development typically occurs.

Agricultural Development

Agricultural development has occurred primarily in the Imperial, Coachella, Mexicali, and Colorado River valleys and on Yuma Mesa. Portions of the Colorado and Imperial valleys were converted entirely to agriculture many decades ago. Limited new agricultural development is continuing northward in the Imperial Valley along the edges of the Salton Sea and on Yuma Mesa. Similarly, in the Coachella Valley development of new lands for agriculture is continuing, especially around Indio and southward adjacent to the Salton Sea. The rate of new development is relatively slow due to limitations on irrigation water. Conversion to agriculture eliminates flat-tailed horned lizard habitat.

Densities of some predators are elevated at or near agricultural lands. Relatively high densities of predators (e.g., common raven, greater roadrunner, American kestrel, burrowing owl, and loggerhead shrike) may result in elevated predation on flat-tailed horned lizards in adjacent undeveloped lands.

Urbanization

Southeastern California and southwestern Arizona are experiencing dramatic growth in human population. Most of the new urban development is occurring on agricultural lands in the Imperial, Coachella, and Colorado River Valleys. However, some urban development is occurring in flat-tailed habitat in the Coachella Valley, Borrego Valley, and on the Yuma Mesa near Yuma and San Luis, Arizona. This development results in a direct loss of habitat and habitat degradation resulting from a variety of human activities, such as off-highway vehicle use and other recreational activities, road construction, route proliferation, and illegal dumping of trash. Urban development may also result in increased populations of potential predators, such as common ravens and domestic dogs and cats, resulting in above natural predation rates on flat-tailed horned lizards in adjacent wildlands (Bolster and Nicol 1989). Growth is also occurring in San Luis, Sonora, including development of an 8,000-acre industrial park in flat-tailed horned lizard habitat on the east end of the city.

Off-highway Vehicle Use

Over the past 20 years, there have been numerous bibliographies (e.g., Webb and Wilshire 1983) and literature reviews (e.g., Berry, in prep) on the effects of off-highway vehicle activity. In 1983, Webb and Wilshire (1983) published a comprehensive analysis on the impacts and management of off-road vehicles in arid regions.

Legal off-highway vehicle use falls into four basic kinds: 1) use of existing routes and trails for access and touring, 2) use of existing routes and trails by motorcycles, four-wheel drive vehicles, and all-terrain cycles as a recreational activity, 3) use of existing routes and trails for competitive vehicle events, and 4) cross-country travel in off-highway vehicle "open areas."

Illegal off-highway vehicle activity occurs in some areas but is limited by law enforcement, signing, and public information and education. The U.S. Border Patrol conducts patrols and rescues near the International Border which sometimes involves cross-country travel.

Currently, California BLM and the Ocotillo Wells SVRA permit competitive events on West Mesa and in Yuha Basin on the western side of the flat-tailed horned lizard's range. In addition, within this area, cross-country travel (or "free-play") is allowed in the BLM's

Plaster City Open Area, the BLM's Superstition Hills Open Area, and the Ocotillo Wells SVRA. Portions of these open areas support flat-tailed horned lizard populations in various densities.

The nature and extent of impacts of off-highway vehicle use depends upon the kind of activity (Webb and Wilshire 1978, Adams *et al.* 1982). Most desert soils are susceptible to compaction from vehicles. Important factors determining the intensity of compaction are soil moisture, vehicle type, and amount of vehicle activity (Davidson and Fox 1974, Webb *et al.* 1978, Adams and Endo 1980). Compaction results in increased water and wind erosion and decreased water infiltration and retention. Important factors in erosion of desert soils are slope, soil particle size, and size of disturbed area (Adams and Endo 1980). Compaction of soils may negatively affect burrowing of flat-tailed horned lizards or the construction of ant nests. Changes in soil characteristics may affect the ability of the soil to support vegetation, resulting in decreased density, diversity, and biomass of plant cover (Davidson and Fox 1974, Webb *et al.* 1978).

Off-road vehicles may impact vegetation by physically damaging roots, stems, or whole plants (Hall 1980). The resulting decrease in biomass and/or change in species diversity may result in a reduced or degraded food base for ant prey species. In addition, decreases in plant cover will decrease protection from predators and shelter from solar heating and wind.

In addition to the indirect effects noted above, flat-tailed horned lizards could be killed directly by being run over, either above ground or in burrows. Flat-tailed horned lizard winter burrows are shallow (average depth of 5.6 cm, range 2.6-10.0, n=6 [Muth and Fisher 1992]); thus, burrows and lizards in burrows may be crushed by vehicles. Bury, Luckenbach, and Busack (Bury *et al.* 1977) found reduced biomass, density, and diversity of reptiles in heavily used areas of off-highway vehicle open areas.

It has been shown that prolonged noise can adversely effect some lizards (e.g., desert iguana, Mojave fringe-toed lizard) (Bondello 1976, Brattstrom and Bondello 1983). However, it is not known whether or not vehicle noise at levels and durations anticipated in the desert negatively impact flat-tailed horned lizards. Effects are more likely where prolonged, loud noise occurs. A bibliography of literature on the effects of noise on animals can by found in Brattstrom (1978).

Utilities

Habitat disturbance from transmission lines results primarily from installation of towers, construction and use of access routes to the tower sites, use of the tower site, use of line-pulling sites, and maintenance activities. Total disturbance is relatively small, usually less than 8 acres per mile. Vasek *et al.* (1975a) found in the Mojave Desert that the overall, long-term effects are a permanently devegetated maintenance road, enhanced vegetation along the road edge and between tower sites, and reduced vegetation cover under the towers, which recovered significantly but not completely in about 33 years. If crushing, rather than blading, is required, time to recovery of spur routes, tower sites, and pulling sites can be reduced. Although new access routes are usually required, sometimes transmission lines are placed along existing maintenance roads.

Habitat disturbance from pipelines results from trenching, stock piling of fill, refilling the trench, and moving vehicles along the corridor during construction and inspections. Total disturbance is also relatively small but greater than transmission lines (i.e., usually less than 16 acres per mile). Natural habitat restoration in the construction zone requires many decades and perhaps centuries (Vasek *et al.* 1975b).

Habitat disturbance from burying fiber-optic cable results primarily from the crushing of vegetation where the tracked vehicle lays the cable. The disturbed area is usually narrow (< 4 meters) resulting in a small disturbance overall (usually less than 1.5 acres per mile).

Neither pipelines, transmission lines, nor fiber-optic cables are likely to function as barriers to movements. However, roads constructed to build or maintain these utilities may cause a proliferation of new access roads into previously undisturbed areas, resulting in off-site habitat disturbance.

Highways, Canals, Railroads

Construction of highways, canals, and railroads eliminates linear strips of flat-tailed horned lizard habitat. Vehicles traveling on roadways may also crush flat-tailed horned lizards. Such mortality could depress local populations and perhaps function as a partial barrier to movement. Flat-tailed horned lizards are less likely to be run over on railroads, but the tracks may create a significant barrier to movements. Some may drown in large canals as well as small agricultural drains, but the significance is unknown. Canals probably function as nearly absolute barriers, with flat-tailed horned lizards able to cross only at bridges and syphons. Barriers to movement can create small, local populations which are susceptible to stochastic events and extinction (Wilcox and Murphy 1985). For example, the Andrade Mesa, a small strip of flat-tailed horned lizard habitat in California north of croplands in Mexico and south of the All-American Canal, is effectively isolated. Highways, canals, and railroads may also facilitate urban and agricultural development, which results in further loss, degradation, and fragmentation of habitat.

Yuma County has proposed to construct the Area Service Highway linking the Araby Road Exit on Interstate 8 and San Luis, Arizona. The proposed route would pass through approximately 10 miles of previously undisturbed flat-tailed horned lizard habitat and would upgrade and pave approximately 5 miles of an existing dirt road.

A new International Border crossing for commercial trucks is proposed to be constructed east of San Luis, Arizona. Improved access is likely to facilitate urban and industrial development, which will cause further loss of habitat on both sides of the international border.

The BR and cooperating water districts have proposed construction of a new, concrete-lined All-American Canal adjacent to the existing unlined canal, from 1 mile west of Pilot Knob to Drop 3 of the Canal in southeastern Imperial County, California (Bureau of Reclamation and Imperial Irrigation District 1990). Construction would destroy a linear strip of desert scrub and dune habitat approximately 400 to 600 feet in width and 23 miles in length. Approximately 725 acres of flat-tailed horned lizard habitat would be lost (Bransfield and Rorabaugh 1993). The project is currently on hold.

Mining and Mineral Material Extraction

Mining and mineral extraction activities cause habitat loss and degradation as a result of long-term loss of vegetation cover and removal of top soil. Associated activities, such as truck and light vehicle traffic can result in direct mortality within the project area as well as outside of the project site along access roads. Even though most mineral material sites (e.g., sand and gravel) are small, their cumulative effect can be significant.

Geothermal Power Development

Geothermal power development is occurring in the Imperial and Mexicali valleys, particularly in agricultural lands, but also in adjacent desert lands. Much geothermal development has occurred in flat-tailed horned lizard habitat in the southwestern portion of East Mesa. Habitat loss and degradation results from power plant construction, wells, pipelines, transmission lines, and service roads. At present, geothermal energy companies believe that the geothermal resource is exploited at or near capacity (Rob Waiwood, Geologist, BLM California Desert District, pers. comm.). No additional power plants are proposed for East Mesa. Some additional disturbance will occur from replacement wells and associated facilities (e.g., pipelines).

Oil and Gas Development

Extensive leasing by the Federal Government of oil and gas rights occurred in the early 1980's in the Salton Sea Trough. Some leasing also occurred in the Yuma Desert south of Yuma. These leases were highly speculative. Only one test well was drilled in

California, and two test wells were drilled in Arizona. None of these wells were profitable, and no oil or gas resources have been identified. At present there are no active Federal leases for oil and gas within the range of the flat-tailed horned lizard in the United States.

Potentially, portions of public land within the range of the flat-tailed horned lizard could be offered for lease in the future. Leasing, which is discretionary, would not take place unless interest had been expressed by the oil and gas industry. Any leasing would be required to adhere to the regulatory standards in sections 3100 to 3540 of the *43 Code of Federal Regulations*. Oil and gas leases may be issued with standard stipulations as well as additional stipulations for sensitive areas, including stipulations requiring no surface occupancy.

The development of an oil and gas field would result in loss or degradation of habitat from well pads, pipelines, and service roads. Some direct mortality could occur on roads used by trucks and other vehicles. Under current regulations the amount and location of disturbance on Federal lands would be subject to strong controls.

Landfills

In recent years there have been increasing attempts to place large, regional landfills serving distant urban centers in remote areas, such as the Colorado Desert. The proposals range from 2,000 to 20,000 acres in size. Large landfills in flat-tailed horned lizard habitat would result in a permanent loss of habitat. Additional degradation of habitat as well as direct mortality and population fragmentation would occur from trash transportation, such as railroads and roads, and ancillary facilities. Although strongly stipulated to limit the effect, landfills may increase populations of predators (e.g., ravens, roadrunners) that potentially could prey on flat-tailed horned lizards many miles from the landfill.

In the past, the Federal Government issued leases to cities and counties for landfills serving local areas. Currently, Federal agencies are disposing of, primarily through exchange or sale, lands proposed for landfills. Local agencies may still develop new sites on private lands in wildland areas. Even though relatively small in size (10-200 acres), these landfills would result in negative effects on flat-tailed horned lizards similar to large, regional landfills.

The Federal Government, through the General Services Administration, recently sold 640 acres of land south of Yuma to the City of Yuma for a regional landfill. The land is located just east of the Arizona State Prison along County 23rd Street (Fig. 11). The land is known to be previously undisturbed and is known to be occupied by flat-tailed horned lizards. The landfill will replace the existing Yuma County landfill located east of Somerton, Arizona.

Military Activities

Three military ranges contain flat-tailed horned lizard habitat. These include lands under airspaces R-2510 in West Mesa and R-2512 in East Mesa and the Salton Sea Test Base. R-2510 overlays target areas 101 and 103, and R-2512 overlays target areas 68 and 95. These ranges are managed by the Naval Air Facility El Centro. The third range is R-2301W located on the western half of the Barry M. Goldwater Aerial Gunnery Range, which is managed by the Marine Corps Air Station at Yuma. The Moving Sands and Cactus West Target Areas are located within R-2301W. Activities on the military ranges vary greatly from range to range and over time. Within flat-tailed horned lizard habitat activities consist of the use of inert (non-exploding) bombs, rockets, and cannon strafing of specific target areas. These targets have an impact area radius of up to 1,500 feet. There are currently five targets in use in Arizona and California. Some of the existing targets have been in use since the early 1940's.

Other activities associated with military ranges include limited ground support associated with air warfare training, clean-up of target sites, cargo parachute drops, roadway and runway maintenance, mobile target activity, and target grading, disking, and general maintenance. Most activity is confined to existing roadways and designated staging areas. Very little off-road activity is required except for special training missions or access by emergency vehicles. Foreseeable future uses of flat-tailed horned lizard habitat in Arizona are described in the Yuma Training Range Complex Draft Environmental Impact Statement; the USFWS has reviewed these activities and provided a conference report on April 17, 1996 (USFWS 1996a). No changes in current uses are anticipated on the California Ranges.

Some military activities result in small amounts of direct habitat disturbance. Effects are likely to be small except where activities are concentrated. Some incendiary devices may start wildfires. See the following section for a discussion of the effects of fire. Explosion of ordnance, aircraft noise at and near airstrips, and other sources of loud noise may cause deafness in lizards at and near the sources of such noise (Brattstrom and Bondello 1983).

Fire

In the summer of 1992, a dense, dried stand of non-native annual plants fueled a fire in northern East Mesa that burned approximately 3,600 acres. Although the effects of the fire have not been quantified, large numbers of perennial shrubs, particularly creosote, were killed. Several small fires of less than ten acres have also been fueled by dried, non-native plants in the Coachella Valley. Habitat in portions of the Coachella Valley and on East Mesa and in Sonora support dense stands of non-native annuals and, as a result, are particularly susceptible to fire. Fires are presumably ignited by lightning strikes, campfires, highway and railroad sources, catalytic converters on off-highway vehicles, military activities (particularly use of flares and bombing), and other activities. Fires are more frequent near towns and roads (Tracy 1994) and are likely to occur after annual plants cure in the spring and before late summer or winter rains reduce the fire hazard.

The effects of fire on flat-tailed horned lizard habitat have not been studied. However, many species of perennial shrubs in desert scrub habitats are generally poorly adapted to fire (Brown and Minnich 1986, Minnich 1994). Fire in desert scrub communities causes vegetational conversion to communities that are more fire tolerant (Minnich 1994). Recovery of pre-fire cover and biomass of desert shrubs is achieved only after several decades (Minnich 1994). Creosote and white bursage, which are often dominant perennial shrubs in flat-tailed horned lizard habitat, typically experience high mortality during fires. Big galleta grass, also an important perennial in some areas, resprouts vigorously after fire (Minnich 1994). Although fire suppression activities are needed to control the size of fires, off-highway access during fires and creation of fire lines can result in habitat damage (Duck *et al.* 1994).

If fire occurs when flat-tailed horned lizards are on or near the surface, individuals could be killed directly by the fire. The effects of vegetation community conversion on flat-tailed horned lizards are unknown, but decreased shrub cover could make individuals more susceptible to predation and environmental extremes. Changes in plant community composition could also facilitate changes in substrates and ant populations that could adversely affect flat-tailed horned lizards. Additional study is needed to quantify the effects of fire on this species and its habitat.

Pesticide Use

Agricultural fields in the range of the flat-tailed horned lizard are sprayed aerially with insecticides to control various insect pests. These pesticides may drift onto adjacent wildlands and kill ants, the primary prey of flat-tailed horned lizards (BLM 1990). Pesticide drift is less likely to be concentrated sufficiently to kill flat-tailed horned lizards directly, but dosages may become lethal if accumulated in the tissues by consuming contaminated prey. Pesticide tolerances of flat-tailed horned lizards are unknown (Johnson 1989). Drift of herbicides from croplands may also injure or kill plants in adjacent flat-tailed horned lizard habitat.

Since 1943 the California Department of Food and Agriculture has conducted a control program for the exotic beet leafhopper, a carrier of curly top virus, which damages crops.

The program has entailed aerial application of insecticides (DDT from 1956-1965 and malathion since 1965) in areas known to harbor the insect. In the past this has included portions of East Mesa, West Mesa, and Yuha Basin in California (Calif. Dept. of Food and Agric. 1991). Figure 2 shows the requested treatment area according to current plans (Calif. Dept. of Food and Agriculture 1995). Historically, treatments in the Imperial Valley have occurred in about one out of every three years with aerial treatment acreage varying between 3,000 and 27,000 acres. The last aerial treatment in this program in Imperial County was in 1991. (Calif. Dept. of Food and Agriculture 1995).

Effects of malathion on the flat-tailed horned lizard have not been studied; however, studies on other lizards has shown no direct effects at applications many times higher than planned here (Hall and Clark 1982; Peterle and Giles 1964; Giles 1970). Harvester ants, which are the primary prey of flat-tailed horned lizards, could be killed by the insecticide treatments (Bolster and Nicol 1989). Proposed treatment protocols call for application during night or early morning hours in the winter or spring. Since most ants in a colony are underground during these cool periods, few ants should be killed directly (Calif. Dept. of Food and Agriculture 1995). Though incomplete, previous monitoring studies have shown that ant colonies recover within a short time (Peterson 1991).

Despite mitigation measures, the overall effects of the program are uncertain. Effects of applying broad-spectrum insecticide over many years to desert scrub communities are potentially many and complex. For instance, changes in invertebrate communities may include changes in pollinator and herbivore populations, which may in turn alter plant communities. Changes in plant communities could precipitate further changes in invertebrate communities and create altered conditions for vertebrates, as well. The effects of this program need further study. The USWFS has recently issued a biological/conference opinion on the beet leafhopper control program (USFWS 1996b). The terms and conditions stipulate that, after the designation of flat-tailed horned lizard management areas, no treatments may occur in those areas and that aerial treatments in high density flat-tailed horned lizard habitat elsewhere should be restricted to the fall and winter months to the extent possible. The decision of the BLM California State Director (March 6, 1997) in authorizing a beet leafhopper malathion control program on public lands in California includes the following terms and conditions:

> "2. All treatment within flat-tailed horned lizard habitat shall be by aerial means only and shall be limited to only one treatment in a given area per year. Program personnel shall not use off-road vehicles in flat-tailed horned lizard habitat, except on designated roads. Treatments within areas designated by BLM as high density flat-tailed horned lizard habitat shall be conducted during the fall and winter months to the maximum extent practicable.

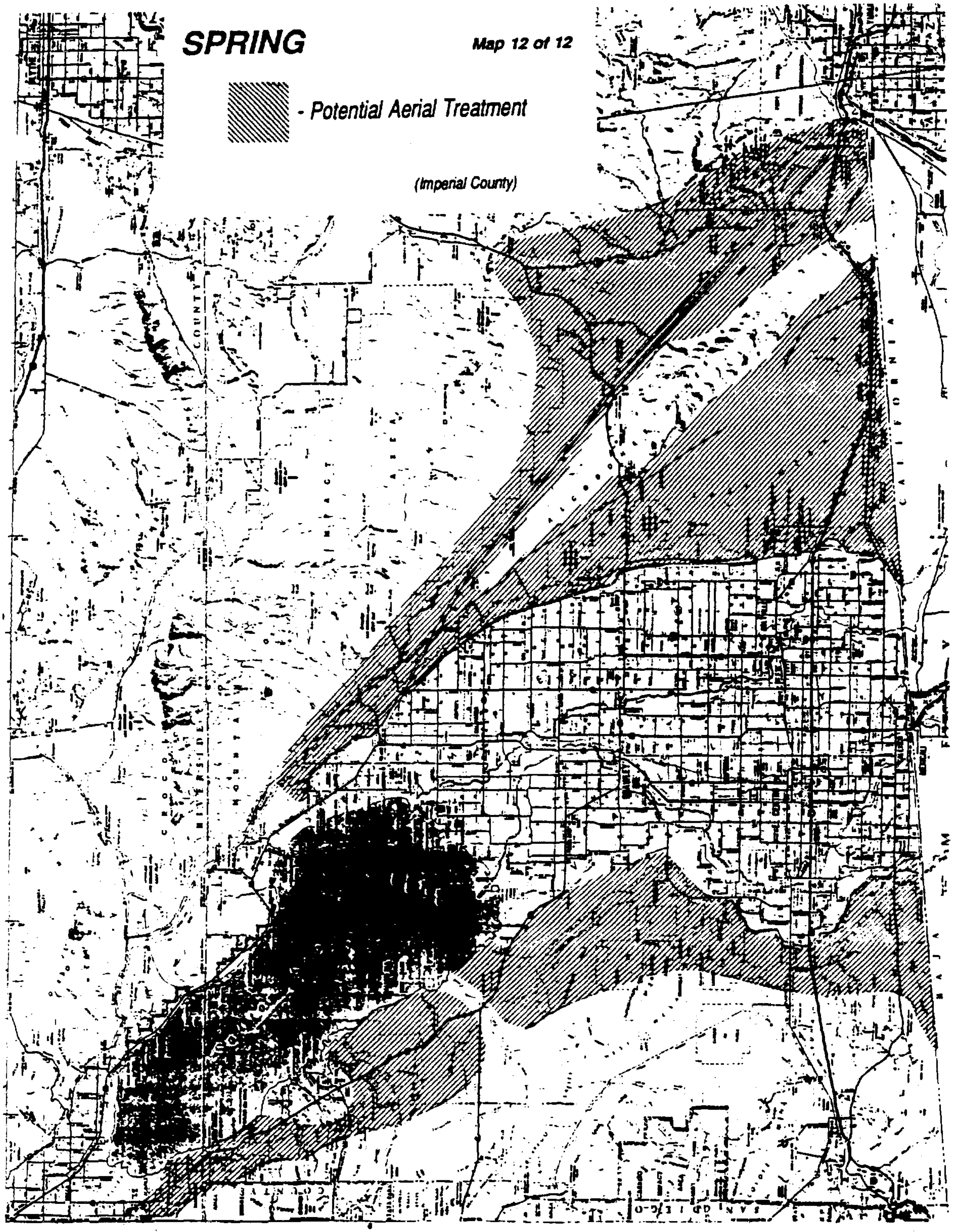

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Figure 2. Requested beet leafhopper malathion treatment area within range of flat-tailed horned lizard (from Calif. Dept. of Food and Agric. 1995).

> 3. If 'flat-tailed horned lizard management areas' are designated during the life of the permit [5 years] pursuant to the ongoing interagency effort to develop a conservation agreement for this species, no treatments shall occur in these management areas after such designations have become effective."

Exotic Plants

Many species of introduced, non-native plants occur in flat-tailed horned lizard habitat. Most are Mediterranean or Asian annual species that germinate in the winter or spring months. Split grass (*Schismus barbatus*) is common throughout the range of the flat-tailed horned lizard and locally abundant. Sahara mustard (*Brassica tournefortii*) and Russian thistle (*Salsola kali*) are locally abundant. Sahara mustard appears to be spreading rapidly in some areas. Many other non-native annual species may be present, especially species in the families Gramineae (grasses), Chenopodiaceae (goosefoots), Cruciferae (mustards), and Compositae (sunflowers), particularly near agricultural areas and near streams or wetlands. Density, diversity, and productivity of both native and non-native annual plants vary greatly from year to year. In years with abundant winter and spring rainfall, densities and diversity of annual plants are often relatively high (Tevis 1958, Inouye 1991, Rorabaugh 1994).

The effects of non-native annual plants on the flat-tailed horned lizard are unknown. However, their abundance in flat-tailed horned lizard habitat is of concern for several reasons. In portions of East Mesa, the Coachella Valley, and habitat in Sonora, densities of Russian thistle and/or Sahara mustard are very great in some years, with stem or culm densities perhaps great enough to impede movement by flat-tailed horned lizards, which are relatively wide-bodied and active. As previously discussed (see section on Fire), high productivity of non-native annuals can fuel fires that destroy native perennial shrubs and facilitate changes in plant composition.

Where non-native annuals have significantly changed plant communities, the types of food available to harvester ants have also been altered. Relationships among species of harvester ants and between ant populations and environmental variables are complex (Ryti and Case 1988, Mackay 1991). Changes in annual plant communities may trigger changes in ant communities that could, in turn, affect predators of ants, including flat-tailed horned lizards.

In addition to non-native annual plants, saltcedar (*Tamarix chinensis*), a non-native perennial shrub or tree, has invaded areas of shallow groundwater in flat-tailed horned lizard habitat on the west side of West Mesa, in the Yuha Basin (Wright 1993), and along portions of the All-American and Coachella Canals. Flat-tailed horned lizards have been recorded in saltcedar communities (Kim Nicol and Betsy Bolster, CDFG, pers. comm.), but dense stands of saltcedar are likely unsuitable for them.

Predation

The same species that have been documented as predators on other horned lizard species also prey on flat-tailed horned lizards (Pianka and Parker 1975). Duncan *et al.* (1994) reported predation by American kestrel (*Falco sparverius*), common raven (*Corvus corax*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), and kit fox (*Vulpes macrotis*) in California. The greater roadrunner (*Geococcyx californianus*), thrashers (*Toxostoma* spp.) and other avian predators are also likely to prey on flat-tailed horned lizards (Bryant 1911). Muth and Fisher (1992) documented predation on flat-tailed horned lizards by round-tailed ground squirrels (*Spermophilus tereticaudus*) and possibly sidewinders (*Crotalus cerastes*). They also considered coachwhip (*Masticophis flagellum*), patch-nosed snake (*Salvadora hexalepis*), glossy snake (*Arizona elegans*), and leaf-nosed snake (*Phyllorhyncus decurtatus*) to be possible flat-tailed horned lizard predators.

Predator densities are often elevated near human development (Bryant 1911). For example, data from the Breeding Bird Survey show that populations of common raven have increased 4.7-fold in the Colorado Desert between 1969 and 1988 (BLM *et al.* 1989). Elevated predation may contribute to a cumulative set of adverse effects that result in population declines in some areas.

Land Disposal

Lands that are removed from Federal or state ownership are available for agricultural development, urban development, landfills, or other surface disturbing activities consistent with local zoning regulations. These activities result in varying degrees of habitat loss and adverse effects to flat-tailed horned lizard populations.

The Arizona State Land Department is disposing of land occupied by flat-tailed horned lizards in two areas: 1) near Fortuna Road east of Yuma and south of Interstate 8 and 2) near the town of San Luis. The parcels of State lands that are currently being sold are immediately adjacent to residential and commercial development and have reached what the State Land Department feels is their peak value. It is expected that these lands will be developed as housing or commercial property soon after their sale and thus will no longer be useable as habitat for flat-tailed horned lizards. The State Land Department is currently denying land sale applications for other State land parcels in flat-tailed horned lizard habitat because these lands have not yet reached their highest potential value.

Other Activities

Various specialized projects and facilities have been proposed for desert areas that provide habitat for the flat-tailed horned lizard. As habitat is lost to these projects, populations of flat-tailed horned lizards will be reduced accordingly. An example of such a project is the Cheyenne Unit of the Arizona State Prison in the Yuma Desert. Together with the existing Cocopah Unit, the prison complex will occupy about 640 acres of former flat-tailed horned lizard habitat (Fig. 11).

Management Program

Overall Goal

MAINTAIN VIABLE POPULATIONS OF FLAT-TAILED HORNED LIZARDS FOR AT LEAST 100 YEARS.

Management Objectives

- Conserve sufficient habitat to maintain viable populations of flat-tailed horned lizards in five management areas.
- Maintain a "long-term stable" or increasing population trend in all management areas. A population that is stable over the long term exhibits no downward trend in numbers or densities of animals after the effects of natural demographic and environmental stochasticity are removed.
- Establish a research area of no less than 60,000 acres in which research related to the flat-tailed horned lizard will be conducted and encourage other research anywhere that promotes conservation of the species.
- Encourage the protection through strong conservation management of one additional management area in the Coachella Valley.
- Outside of management areas, limit the loss of habitat and effects on populations of flat-tailed horned lizards through the application of effective mitigation and compensation.
- Encourage adoption of a flat-tailed horned lizard conservation program in Mexico.

General Management Strategy

In 1994, the USFWS, BLM, BR, Department of Defense, and several other agencies signed Memorandum of Understanding (MOU) "...on Implementation of the Endangered Species Act" that established a general framework for cooperation and participation among cooperators in the conservation of species tending toward Federal listing as threatened or endangered under the Endangered Species Act. The MOU identified the development of conservation agreements as a valuable process for achieving conservation of species through voluntary cooperation. A conservation agreement is a formal, written document agreed to by the USFWS and other cooperators that identifies specific actions and responsibilities for which each party agrees to be accountable. The objective of a conservation agreement is to reduce threats to a candidate species or its habitat, possibly lowering the listing priority or eliminating the need to list the species.

It is intended that this strategy will form the basis of a conservation agreement among the cooperators for management of flat-tailed horned lizards. If the USFWS determines that the resulting conservation agreement would be effective and that listing the flat-tailed horned lizard is unnecessary, it would retain the ability to reconsider the effectiveness of the agreement. Lack of compliance among the cooperators, a change of circumstances, or other reasons may alter the expected result of this strategy. If threats to the flat-tailed horned lizard or its habitat are not reduced, the USFWS may proceed with another proposed or an emergency listing.

The purpose of this strategy is to provide a framework for conserving sufficient habitat to maintain several viable populations of the flat-tailed horned lizard throughout the species' range in the United States. Further research on the demography of the species will be needed to precisely define the number of lizards in a viable population and the habitat area necessary to support a viable population. In the absence of such research and analyses, this strategy recommends establishing management areas encompassing large blocks of habitat where surface disturbing and mortality causing activities are minimal.

Signatory agencies will incorporate measures in the Rangewide Strategy into their land management plans. Compliance with the National Environmental Policy Act and state counterparts will be achieved through these management plans or revisions.

Management Areas

Management areas were designed to include most flat-tailed horned lizard habitat identified as key areas in previous studies, even though the absolute densities of flat-tailed horned lizards within the management areas are not known. To the best of our ability and with the most recent information, management areas were proposed based upon accepted principles of good preserve design (Appendix 1). The management areas have been placed where significant conflict over the special management prescriptions is not occurring and is not anticipated. The management areas include as large an area as possible, but avoid extensive, existing and predicted management conflicts (e.g., off-highway vehicle open areas, geothermal development). Conflicts which are localized in nature (e.g., sand and gravel mines, military bombing targets) may be included within some of the management areas.

The prescriptions that guide the management of lands within the management areas (see part 2 of "Planning Actions") are designed primarily to reduce surface disturbance and to promote reclamation of areas, such as duplicate roads, that are no longer needed.

Research Area

A Research Area (RA) is proposed in California (Fig. 6 and 10) where studies of the flat-tailed horned lizard will be encouraged and funded by the CDPR's Division of Off-Highway Motor Vehicle Recreation. The RA is about 76,700 acres in size. About 43,000 acres of the RA are owned by the State and managed as the Ocotillo Wells State Vehicle Recreation Area (OWSVRA). BLM has 20,900 acres, of which about 8,000 acres which are managed by the OWSVRA. The remaining 12,900 acres of BLM land are managed according to provisions in the California Desert Conservation Area Plan. The State has applied to BLM under the Recreation and Public Purposes Act for transfer and patenting of all 20,900 acres of BLM to the OWSVRA. The State is also actively acquiring the remaining private lands (12,800 acres) within the RA.

While the OWSVRA prohibits most surface disturbing activities, off-highway vehicle free-play, racing, and touring will continue. A comparison of flat-tailed horned lizard densities in areas with and without off-highway vehicle activity will be the subject of study. It is not yet known if these activities will preclude the maintenance of a viable population of flat-tailed horned lizards at OWSVRA.

Corridors

It is recognized that the Colorado River has been a long-term, natural barrier between populations in Arizona and California, and that this may have resulted in genetic divergence (see Fig. 1, p. 4). Within historic times, the population in East Mesa has been effectively isolated from those to the west and south by the Salton Sea, extensive agricultural development, canals, and highways. However, those management areas to the west (i.e., Yuha Desert, West Mesa, and Borrego Badlands) lie relatively close to one another, and some movement between management areas may occur. Planned actions provide guidance for managers to maintain sufficient habitat to provide for interchange of flat-tailed horned lizards between management areas. In this way, those naturally adjoining populations of flat-tailed horned lizards will be able to interbreed, helping to maintain genetic vigor, and natural recolonization could occur in the case of extirpation from a management area.

Other Areas

Flat-tailed horned lizard habitat outside of these management areas would receive a degree of protection through mitigation and compensation. Specifically, signatories to the conservation agreement would ensure that adverse effects of projects they authorize outside of management areas would be mitigated and that residual effects would be compensated in accordance with a standard formula. The funds obtained through compensation would be used to consolidate land ownership within the management areas, enhance habitat, or conduct research.

Mexican Habitat

Although this rangewide management strategy currently addresses habitat only in the United States, there are objectives and planned actions for establishing and maintaining contacts with appropriate agencies and personnel in Mexico to promote the conservation of flat-tailed horned lizard habitat within Mexico. Agencies that have the authority to work with Mexico, including the AGFD, CDFG, USFWS, and BLM, will be making these contacts. It is hoped that through these contacts and exchanges of ideas a similar management strategy will be adopted in Mexico. This program may include corridors between management areas in the United States and Mexico.

Route Closures

To reduce direct mortality from vehicles and to limit the increase in surface disturbance from the proliferation of routes, each discretionary, designated route in an MA shall require justification for the necessity of the route. Designated routes shall be prioritized in terms of importance to the flat-tailed horned lizard and to the OHV community and other public and private route users. Redundant, low priority, and non-essential routes in MAs shall be closed and restored.

The following process will be utilized to reduce route density in MAs:

Step 1 - A small, interdisciplinary team shall be formed. The team should include, at a minimum, biological and recreation staff from the land management agency and representatives of USFWS, the state wildlife agency, the state off-highway recreation agency, and important user groups. Other management agency staff, such as surface protection specialist or realty specialist, may be added as desirable.

Step 2 - The team shall identify non-discretionary routes (e.g., routes with existing rights-of-way) and discretionary routes (i.e., routes that can be closed at the discretion of the land management agency).

Step 3 - Representatives of users of routes shall assign an importance priority to each discretionary route. A written justification for each desired open route shall be prepared.

Step 4 - The team shall evaluate route densities and priorities, flat-tailed horned lizard population density and trend data, flat-tailed horned lizard home range size, and habitat disturbance attributed to routes to determine the level of route closures needed to ensure viable populations of flat-tailed horned lizards. Areas within MAs that support high levels of vehicular use and that are particularly important for the flat-tailed horned lizard shall be identified as high priority areas for route closure.

Step 5 - Within areas identified for route closure, the team shall identify discretionary routes needing closure. Any discretionary route that serves no identifiable purpose, parallel routes, routes with no identifiable destination, and routes with high resource damage shall also be recommended for closure. Routes along utility corridors and canals and routes used by agencies (e.g., Border Patrol access) shall be evaluated for closure except to specific, authorized users.

Step 6 - All necessary Federal and State environmental reviews shall be completed.

Step 7 - Closed routes shall be signed, as necessary, and restored.

Habitat Rehabilitation

Damaged and degraded areas in the desert may take centuries to recover their original appearance and ecosystem function without intervention. Preparation of the ground surface and replanting of vegetation may speed the restoration of the native flora, the rebuilding of the soil structure, and the reestablishment of native wildlife. Damaged and degraded areas within the management areas, including closed routes of travel, shall be rehabilitated using the most effective techniques known. These techniques include, but are not limited to, those discussed briefly in Appendix 8.

Inventory, Monitoring, and Research

The flat-tailed horned lizard is among the least known of the phrynosomatid lizards in the United States. Existing inventory methods based on counting scat have unknown precision and accuracy. Investigators have been unable to find and capture, then recapture individuals on a regular basis. Population trends in most areas are unknown. Long-term monitoring of habitat and populations will be continued or initiated, but new methodologies will need to be developed. It is anticipated that research funded in the Department of Defense Legacy Program being initiated in 1995 will lead to new or revised monitoring methods.

Several important aspects of the species ecology and life history are unknown or uncertain. More information on how human activities impact flat-tailed horned lizards is needed. Research into various aspects of life history, impacts of activities, and management effectiveness is proposed in this strategy. The list of proposed research topics (see Planning Action 8) and monitoring parameters (see Planning Action 9) was developed by the Workgroup and was reviewed and modified by the Conservation Team.

Inventory, monitoring, and research data collected from these efforts will be analyzed by an Interagency Coordinating Committee and considered during annual reviews. Based on this information, actions may be modified through a Management Oversight Group.

Planning Actions

The following planning actions have been developed as recommendations to management agencies to ensure that the goal of population viability within each management area is achieved. It is understood that implementation of these actions is subject to availability of funds and compliance with all applicable regulations. It is anticipated that specific actions may be modified based on information obtained from future monitoring, research, and evaluations of the effectiveness of this strategy. Annual evaluations and proposed modifications of this strategy shall be coordinated through the Flat-tailed Horned Lizard Interagency Coordinating Committee. The Management Oversight Group will meet as necessary to review recommendations of the Interagency Coordinating Committee and may make corresponding modifications to planning actions in the Strategy.

1. Delineate and designate five flat-tailed horned lizard management areas (MAs) and one flat-tailed horned lizard research area (RA). See Table 1 (Appendix 2) for a summary of land ownership within each MA. Boundary descriptions and geographic information system (GIS) maps are on file with land management agencies.

1.1 Designate the Yuma Desert Flat-tailed Horned Lizard MA as shown on Figure 3 (Appendix 2). If the proposed Area Service Highway is constructed along a portion of the boundary of the MA, the east and south side of the right-of-way will be the new western and northern boundary of the MA, as appropriate.

1.2 Designate the East Mesa Flat-tailed Horned Lizard MA as shown on Figure 4 and 5 (Appendix 2).

1.3 Designate the West Mesa Flat-tailed Horned Lizard MA as shown on Figure 6 and 7 (Appendix 2).

1.4 Designate the Yuha Desert Flat-tailed Horned Lizard MA as shown on Figure 6 and 8 (Appendix 2).

1.5 Designate the Borrego Badlands Flat-tailed Horned Lizard MA as shown on Figure 6 and 9 (Appendix 2).

1.6 Designate the area shown in Figure 6 and 10 (Appendix 2) in and around the Ocotillo Wells SVRA as the Ocotillo Wells Flat-tailed Horned Lizard Research Area (RA).

1.7. Encourage the development of one additional flat-tailed horned lizard MA in the Coachella Valley by working with other agencies and organizations in developing a Coachella Valley Multi-species Plan that incorporates a management area capable of sustaining a viable population of flat-tailed horned lizards.

2. Define and implement management actions necessary to minimize loss or degradation of habitat.

2.1 Mitigate and compensate, as needed, project impacts on flat-tailed horned lizard and its habitat both within and outside of MAs and the RA through humane and cost-effective measures.

2.1.1 Apply mitigation measures in Appendix 3, as appropriate, based on the nature of the anticipated impacts.

2.1.2 In accordance with Appendix 4, require compensation for residual impacts remaining after application of other mitigation measures.

2.2 Limit land use authorizations that would cause surface disturbance within the MAs.

2.2.1 Land use applications will continue to be reviewed on a case-by-case basis for impacts on flat-tailed horned lizards and their habitat. Every attempt shall be made to locate projects outside of MAs. New rights-of-way may be permitted only along the boundaries of MAs and only if impacts can be mitigated to avoid long-term effects on populations of flat-tailed horned lizards in the MA. Where discretionary, other new authorizations may be permitted if the habitat disturbance does not pose a significant barrier to lizard movements. Disturbance shall be limited to 10 acres or less per authorization, if possible. If individual disturbances over 10 acres are necessary, the Interagency Coordinating Committee and the Management Oversight Group shall be contacted to provide suggestions form minimizing potential impacts to flat-tailed horned lizards. The cumulative new disturbance per MA may not exceed 1 percent of the total acreage. All authorizations must be conducted in accordance with applicable mitigation and compensation.

2.2.2 All federally owned lands in the MAs shall be retained in Federal ownership (except the patenting of mining claims pursuant to the General Mining Law of 1872). Lands in MAs owned by the State of California and managed as preserves, refuges, or parks shall be retained in state ownership.

2.2.3 Maintenance of all existing rights-of-way facilities may continue within MAs.

2.2.4 The proposed Area Service Highway is outside of the Yuma Desert MA. This and other new road construction along the boundary of the Yuma Desert MA shall require fencing to reduce access to the MA and lizard exclusion fencing to reduce lizard mortality.

2.3 Limit and/or reduce surface disturbance in MAs from discretionary minerals actions.

2.3.1 Allowable activities are the following: 1) leasing under the mineral leasing laws with no surface occupancy; 2) development and production in existing mineral material extraction sites in accordance with local, state, and federal laws and land-use plans, and subject to applicable mitigation; 3) new leases and permits for geothermal energy with stipulations of no surface occupancy (in California MAs only); and other mining and exploration activities authorized under the General Mining Law of 1872. Replacement wells and operation and maintenance of facilities shall be allowed on existing leases. The activities listed above shall be subject to applicable mitigation and compensation (Appendices 3 and 4, respectively).

2.4 Limit vehicle access and limit route proliferation within MAs.

2.4.1 Reduce new road construction to a minimum by coordinating access needs and avoiding conflicts and replication in road use, development, and management. Allow maintenance of roads on a case-by-case basis, recognizing that maintenance of some roads may be necessary to prevent proliferation of parallel routes. Any new surface disturbance associated with road maintenance shall require mitigation.

2.4.2 All routes shall be designated "closed" to motorized vehicles, "open" for general public use by all types of vehicles, or "limited" to a specific season, user, or vehicle type or number. Vehicle use shall be restricted to designated open and limited routes. Routes in MAs shall be given a high priority for signing.

2.4.3 Reduce open and limited route density in MAs, particularly in portions of MAs where route density is high.

2.4.4 Participating land managers shall coordinate with the U. S. Border Patrol to ensure cooperation with and enforcement of vehicle regulations in MAs and the RA to the maximum extent possible.

2.5 Limit the impacts of recreational activities within MAs.

2.5.1 All types of vehicle-oriented recreation in compliance with current regulations may occur within the RA.

2.5.2 Permit no competitive recreational events within MAs. A competitive event is any event where speed or elements of competition (i.e., winning) are present in any form. Non-competitive events may be allowed on routes designated open for public use during the flat-tailed horned lizard season of hibernation. Other types of vehicle-based recreation except camping (see action 2.5.4) in compliance with current regulations may occur within MAs.

2.5.3 Allow non-motorized recreational activities, such as rockhounding, hiking, backpacking, non-vehicle based camping, picnicking, bicycling, horseback-riding, hunting, birdwatching, and nature study, in all MAs and the RA in accordance with existing regulations. Development of new recreational facilities, such as visitor centers, campgrounds, mountain bike trails, equestrian trails, shall not be allowed within MAs, if these would create new surface disturbance. Installation of interpretive signing and informational kiosks is allowed.

2.5.4 Allow vehicle-based camping only in developed campgrounds, designated camping areas or within 50 feet from centerline of a designated open route within MAs. More restrictive measures may apply in certain areas. Non-vehicle camping may occur anywhere.

2.5.5 No long-term camping areas shall be designated or developed in MAs.

2.6 Make no sales and allow no commercial collecting of native plant products (including whole plants, plant parts, flowers, and seeds) within MAs, except as needed for rehabilitation projects within the MAs.

2.7 Within the MAs, allow off-road military maneuvers and encampments only in designated sites. Allow other military activities on previously disturbed lands managed by Department of Defense agencies consistent with normal operations and functions. Marine Corps activities on the Barry M. Goldwater Range shall be governed by Conference Opinion 2-21-95-F-114, dated April 17, 1996 (USFWS 1996) whether the species is listed or not. This conference opinion is consistent with the strategy set forth in this document.

2.8 Suppress fires in MAs and the BLM-administered lands in the RA using a mix of the following methods: 1) aerial attack with fire retardants, 2) crews using hand tools to create fire breaks, 3) mobile attack engines limited to public roads, designated open routes, and routes authorized for limited-use. Do not allow earth-moving equipment (such as bulldozers) except in critical situations to protect life, property, or resources. Post-suppression mitigation shall include rehabilitation of firebreaks and other ground disturbances using hand tools.

2.9 No pesticide treatments shall be applied within MAs.

2.10 Within an MA, other discretionary land uses and activities not consistent or compatible with the above restrictions and the general management strategy shall not be approved by the authorizing agency.

3. Within the MAs, rehabilitate damaged and degraded habitat, including closed routes and other small areas of past intense activity. Methods to be used may include, but are not limited to, a) ripping or scarifying compacted soils, b) recontouring the surface, c) pitting or imprinting the surface, d) seeding with native plants, e) planting seedlings, f) irrigating, and g) barricading. These techniques are described briefly in Appendix 8.

4. Attempt to acquire through exchange, donation, or purchase from willing sellers all private lands within MAs.

4.1 Establish and maintain with approval of the Management Oversight Group (see Plan Action 6.1.1) a prioritized list of parcels or screening criteria for acquisition within each MA and habitat corridor.

4.2 Seek funding to acquire key parcels within MAs.

4.3 Using compensation and other funds, acquire land within MAs in accordance with established priorities and/or criteria.

4.4 Participate in exchanges where opportunities arise to acquire key parcels within MAs.

5. Maintain or establish effective habitat corridors between naturally adjacent populations.

5.1 Activities in potential habitat corridors between MAs and the RA shall be regulated or mitigated so that at least occasional interchange of flat-tailed horned lizards occurs among adjacent populations. Potential habitat corridors include lands between West Mesa and Yuha Desert MAs and between West Mesa MA and Ocotillo Wells RA. In addition, activities in the Yuha Desert and Yuma Desert MAs that would prevent interchange of flat-tailed horned lizards across the International Border shall be prohibited.

5.2 Coordinate conservation efforts with Mexico and Immigration and Naturalization Service to ensure continued movement of flat-tailed horned lizards across the International Border in the Yuha Desert and Yuma Desert MAs.

6. Coordinate activities and funding among the participating agencies and Mexican agencies.

6.1 Maintain information exchange and coordination of monitoring, management activities, and research.

6.1.1 Establish a Flat-tailed Horned Lizard Management Oversight Group (FTHL MOG) consisting of management representatives from agencies participating in the conservation agreement (see Planned Action 6.2). The FTHL MOG shall provide management-level leadership, coordination, and oversight in the implementation of this Management Strategy. The FTHL MOG shall review progress in implementing the conservation agreement, approve amendments to the Strategy, set priorities, and recommend measures to resolve management issues relevant to implementation of the Management Strategy. The FTHL MOG shall provide overall policy guidance and coordination among the cooperators for the use of compensation funds.

6.1.2 Hold semi-annual meetings of the Interagency Coordinating Committee (ICC). Each of the participating agencies shall designate a representative(s) to the ICC. Representatives from other agencies, organizations, and groups with special interests or knowledge of the flat-tailed horned lizard may also be invited to ICC meetings. The ICC shall function as a forum for exchange of information on research results and proposals and for discussion of technical and management issues. The ICC may be assigned specific duties and responsibilities by the FTHL MOG.

6.1.3 Develop a forum for discussions with agencies and individual counterparts in Mexico to coordinate activities, provide information exchange, and promote development of a flat-tailed horned lizard conservation program in Mexico.

6.2 Confirm commitment of agencies participating in this Management Strategy through development and signing of a conservation agreement.

6.3 Incorporate management actions from this Strategy when developing multi-agency, multi-species ecosystem plans for the ecoregions in the range of the flat-tailed horned lizard incorporating management actions from this Strategy.

6.3.1 Incorporate actions in the development of the Western Colorado Desert Coordinated Management Plan (including the Yuha Desert, West Mesa, East Mesa, Borrego Badlands MAs and Ocotillo Wells RA).

6.3.2 Incorporate actions in the development of the Coachella Valley Multi-species Plan (including proposed Coachella Valley MA.)

6.4 Coordinate with the Border Patrol in developing mutual agreements for the conservation of natural resources.

7. Promote the purposes of the strategy through law enforcement and public education.

7.1 Provide law enforcement in MAs sufficient to ensure compliance with off-highway vehicle and other regulations as described in the planned actions.

7.2 Public information and education about the MAs and RA, including but not limited to interpretive signs and brochures, shall be made available to the public at the offices and interpretive centers of the participating agencies. Information provided shall describe the purposes of the MAs and RA and shall list all pertinent regulations.

8. Encourage and support research that will promote the conservation of flat-tailed horned lizards or desert ecosystems and will effectively define and implement necessary management actions, both within and outside of MAs and the RA. Planned actions 8.3 and 8.4 shall be emphasized, as recommended by the Conservation Team.

8.1 All research shall be conducted under permit from the land management agency. Permits from the state game and fish agency may also be required.

8.2 The Ocotillo Wells SVRA shall continue to budget for research for at least 5 years. Research designs will be recommended by a team of scientists and managers. Results shall be distributed to other land management agencies.

8.3 Develop a cost-effective technique for assessing flat-tailed horned lizard abundance.

8.3.1 Test trapping and other techniques (e.g., pit fall traps, minnow traps, drift fences, funnel traps, road surveys, walking surveys, and detection by dogs) to enumerate flat-tailed horned lizards directly.

8.3.2 Determine effectiveness of direct enumeration techniques and scat counts as an index of relative abundance using test plots of known density.

8.4 Determine the following life history and demographic parameters and how they vary with environmental conditions:

- Age-specific mortality
- Longevity
- Clutch size
- Age-specific number of clutches per year
- Hatching success
- Recruitment
- Diet
- Home range size

8.5 Determine effects of the following activities and factors on flat-tailed horned lizard demographics and habitat:

- Paved roads and highways
- Off-highway vehicle use and associated activities
- Geothermal development
- Pesticide Use
- Predation
- Non-native plants
- Fire

8.6 Determine genetic variation among populations and the effects of barriers on movements.

8.6.1 Determine genetic variation in populations in the different MAs.

8.6.2 Determine effects of human-created barriers such as railroads, canals, paved roads, agricultural fields, and extensively denuded areas.

8.6.3 Determine effects of natural barriers, such as the Colorado River.

8.7 Determine the effectiveness of the mitigation measures described in Appendix 3.

9.0 Continue inventory and monitoring.

9.1 Continue to inventory lands within the range of flat-tailed horned lizards.

9.2 Monitor habitat quality and population trends in five MAs to determine progress toward overall management goal.

9.2.1 The ICC shall monitor implementation of the strategy and/or resulting conservation agreement.

9.2.2 Land management agencies shall monitor regional population trends using standardized techniques to be developed (see Planned Action 8.3).

9.2.3 Land management agencies shall document habitat disturbance and loss.

9.2.4 The ICC shall prepare an annual report of monitoring results and progress on implementation.

9.2.5 New inventory, monitoring, and research data shall be used in evaluations of the Management Strategy and in assessing proposed changes to the Management Strategy. Solicit and consider input from affected agencies and the public before incorporating any such modifications.

Implementation

Priorities, Estimated Costs, Schedule

The following table displays the priority, responsible agency, estimated cost, and schedule for completing each planning action. Initiation of these actions is subject to availability of funds.

The priorities indicated in the table are assigned the following definitions:

Priority 1: An action that must be taken in the near term to conserve the species and prevent irreversible population declines.

Priority 2: An action that must be taken to prevent significant declines in population or habitat quality.

Priority 3: All other actions necessary to meet the goals and objectives of this Strategy.

The following abbreviations are used in the implementation table for the responsible parties:

ABDSP = Anza-Borrego Desert State Park
AGFD = Arizona Game and Fish Department
BLM = Bureau of Land Management
BR = Bureau of Reclamation
ICC = Interagency Coordinating Committee
CDFG = California Department of Fish and Game
OWSVRA = Ocotillo Wells State Vehicular Recreation Area
USFWS = U. S. Fish and Wildlife Service
USMC = U. S. Marine Corps
USN = U. S. Navy

Flat-tailed Horned Lizard Strategy Implementation Schedule

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000) FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
		1. Delineate and designate flat-tailed horned lizard management areas.								
1	1.1	Designate Yuma Desert MA	2	BLM BR USMC	8	4				
1	1.2	Designate East Mesa MA	2	BLM USN	8	4	4			
1	1.3	Designate West Mesa MA	2	BLM USN	8	4	4			
1	1.4	Designate Yuha Desert MA	2	BLM	8	4	4			
1	1.5	Designate Borrego Badlands MA	2	ABDSP	4	2	2			
3	1.6	Designate Ocotillo Wells RA	1	BLM OWSVRA ABDSP	8	4	4			
3	1.7	Encourage MA in Coachella Valley	1	BLM USFWS CDFG	0					
		2. Define and implement actions necessary to minimize loss or degradation of habitat.								
1	2.1.1	Apply mitigation measures	on-going	All	0					
1	2.1.2	Require compensation	on-going	All	15	3	3	3	3	3
1	2.2.1	Limit discretionary land uses authorizations and ROWs to 10 acres and 1% total per MA	on-going	All	0					
1	2.2.2	Do not dispose of lands in MAs	on-going	All	0					

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000)				
						FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
3	2.2.3	Maintenance in existing ROWs may continue	on-going	All	0					
2	2.2.4	Require fencing along Yuma MA boundary road								
2	2.3.1	Limit surface disturbance from mineral activities in MAs	on-going	All	0					
2	2.4.1	Reduce new roads to a minimum in MAs	2	All	0					
1	2.4.2	Designate routes "open," "closed, or limited." Give route signing a priority.	2/on-going	BLM	180	40	80	20	20	20
1	2.4.3	Reduce route density in MAs	See 2.4.2							
1	2.4.4	Coordinate with U. S. Border Patrol	on-going	BLM BR USN USMC OWSVRA ABDSP	20	4	4	4	4	4
3	2.5.1	Vehicle-oriented recreation allowed in RA	on-going	BLM OWSVRA	0					
1	2.5.2	No competitive recreational events in MAs	on-going	All	0					
2	2.5.3	Non-motorized recreational activities allowed in MAs, but no new recreational facilities	on-going	All	0					
2	2.5.4	Limit camping in MAs	2/on-going	BLM	20	10	10			
2	2.5.5	No new long-term visitor areas in MAs	on-going	All	0					
3	2.6	Do not sell plant products in MAs	on-going	All	0					
1	2.7	Allow military maneuvers and encampments only in designated sites in MAs	on-going	USN USMC	0					

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000) FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
3	2.8	Suppress fires in MAs using limited fire suppression methods in MAs	on-going	All	0					
1	2.9	Prohibit pesticide treatments in MAs	on-going	All	0					
3	2.10	Limit other activities consistent with above	on-going	All	0					
	3.	**Rehabilitate damaged and degraded habitat.**								
2	3	Rehabilitate damaged and degraded habitat in MAs	on-going	BLM BR ABDSP USMC USN	200	40	40	40	40	40
	4.	**Bring all lands within management areas into public management.**								
3	4.1	Maintain prioritized list of parcels for acquisitions; and respect private rights	1	All	0					
3	4.2	Seek funds for land acquisitions in MAs (37,600 acres of private lands acres in California MAs and 15,500 acres of State Land Department lands in Yuma Desert MA at $250 per acre)	on-going	All	15,900					

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000) FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
3	4.3	Use compensation funds to acquire key lands in MAs	on-going	BLM AGFD CDFG ABDSP OWSVRA	20	4	4	4	4	4
3	4.4	Exchange lands opportunistically	on-going	BLM	20	4	4	4	4	4
	5.	**Maintain or establish effective habitat corridors between naturally adjacent populations.**								
2	5.1	Limit or mitigate activities in movement corridors	on-going	All	25	5	5	5	5	5
3	5.2	Coordinate with Mexico and INS	on-going	All	10	2	2	2	2	2
	6.	**Coordinate activities and funding among the participating agencies and Mexican agencies.**								
2	6.1.1	Establish FTHL MOG	on-going	All	20	4	4	4	4	4
2	6.1.2	Hold semi-annual ICC meetings	on-going	All	5	1	1	1	1	1
3	6.1.3	Establish forum for discussions with agencies and individuals in Mexico	on-going	All	5	1	1	1	1	1
1	6.2	Develop Conservation Agreement	1	All	4[1]					

[1] Cooperative Agreement to be developed and signed in 1997.

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000)				
						FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
2	6.3.1	Incorporate actions in Western Colorado Desert ecosystem plan (Note: other state and local agencies will fill key roles)	3	BLM CDFG OWSVRA ABDSP USFWS USN	750	20	300	250	200	
2	6.3.2	Incorporate actions in Coachella Valley Multi-species Plan (Note: other state and local agencies will fill key roles)	3	BLM CDFG USFWS	600	300	200	100		
1	6.4	Coordinate with U. S. Border Patrol and develop mutual agreements	2	BLM BR	6	3	3			
	7.	**Promote the purposes of the strategy through law enforcement and public education.**								
1	7.1	Provide adequate law enforcement	on-going	BLM CDFG AGFD	750	150	150	150	150	150
3	7.2	Provide public information and education	on-going	All	25	5	5	5	5	5
	8.	**Conduct research necessary to effectively define and implement necessary management actions.**								
	8					(schedules to be determined)				
3	8.1	Require permits for research	on-going	All	5	1	1	1	1	1

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000) FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
2	8.2	Ocotillo Wells SVRA shall continue to fund research	on-going	OWSVRA	200[1]	40	40	40		
2	8.3.1	Test trapping as a population census technique	2	OWSVRA USMC	170[2]					
2	8.3.2	Test direct counting methods	2	OWSVRA USMC		Included in 8.2 and 8.3.1				
2	8.4	Determine life history and demographic data	2	USMC OWSVRA	100	Also included in 8.2 and 8.3.1				
2	8.5	Determine effects of conflicting activities	5	All	300					
3	8.6.1	Determine genetic variation in population	5	All	30					
3	8.6.2	Determine effects of non-natural barriers	5	All	30					
3	8.6.3	Determine effects of natural barriers	5	All	15					
3	8.7	Determine effectiveness of mitigation measures	5	All	20					

1 Funding for 5-year study began in 1996.
2 Funding for multi-year study provided in 1996.

(continued)

Flat-tailed Horned Lizard Strategy Implementation Schedule (continued).

Priority number	Action number	Planned action	Duration (yrs)	Resp. agency	Total cost ($000)	Cost estimates ($000) FY 1998	FY 1999	FY 2000	FY 2001	FY 2002
	9.	**Continue inventory and monitoring.**								
2	9.1	Continue inventories	on-going	BLM OWSVRA ABDSP USFWS AGFD CDFG	125	25	25	25	25	25
2	9.2.1	Monitor implementation	on-going	ICC	40	8	8	8	8	8
2	9.2.2	Monitor population trends	on-going	BLM OWSVRA ABDSP	200	0	50	50	50	50
1	9.2.3	Document habitat disturbance and loss	on-going	BLM OWSVRA ABDSP	40	8	8	8	8	8
2	9.2.4	Prepare annual monitoring/ implementation report	on-going	ICC	20	4	4	4	4	4
1	9.2.5	Use new inventory, monitoring, and research data in evaluations and proposed changes	on-going	All	0					

(End of Table)

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APPENDIX 1

Principles of Good Preserve Design

The following principles of reserve design are taken from Noss and Cooperrider (1994). They presented the list with the following introduction:

> In their conservation strategy for the northern spotted owl, Thomas *et al.* (1990) listed five reserve design concepts that they characterized as 'widely accepted among specialists in the fields of ecology and conservation biology.' We agree, and paraphrase these guidelines below, adding a sixth (from Noss 1992) that applies to species that are especially sensitive to human disturbance and, therefore, greatly in need of protection.
>
> 1. Species well distributed across their native range are less susceptible to extinction than species confined to small portions of their range.
> 2. Large blocks of habitat containing large populations of a target species are superior to small blocks of habitat containing small populations.
> 3. Blocks of habitat close together are better than blocks far apart.
> 4. Habitat in contiguous blocks is better than fragmented blocks.
> 5. Interconnected blocks of habitat are better than isolated blocks, and dispersing individuals travel more easily through habitat resembling that preferred by the species in question.
> 6. Blocks of habitat that are roadless or otherwise inaccessible to humans are better than roaded and accessible habitat blocks.

APPENDIX 2

Tables and Figures Describing Management Areas

Table 1. Sizes (acres) and ownership of proposed flat-tailed horned lizard management areas.

Management Area[1]	Federal Non-military[2]	Federal Military	State[3]	Private	TOTAL
Yuma Desert[6]	16,200	99,300[4]	15,500[5]		131,000
East Mesa	99,900	8,500		6,900	115,300
West Mesa	83,200	29,800	1,300	21,800	136,100
Yuha Basin	57,200			3,000	60,200
Borrego Badlands			36,500	5,900	42,400
TOTAL	256,300	138,100	53,200	37,600	485,200

1. The existing Coachella Valley Preserve includes about 17,076 acres administered by Federal and State agencies and private organizations.
2. Includes lands administered by the BLM and BR.
3. Includes lands administered by CDPR, California State Lands Commission, and Arizona State Land Department.
4. Lands administered by U. S. Marine Corps and BLM.
5. State lands administered by Arizona State Land Department. It is expected that these lands will not be managed under this Strategy.
6. A portion of the Yuma Desert MA boundary will be formed by the proposed Area Service Highway, if and when constructed.

List of Figures Showing Management Areas

On the following pages, Figures 3, 4, and 6 show the general location of the MAs and RA. Figures 5, 7, 8, 9, and 10 are included to show more detailed land ownership and to show routes of travel in California. Some of these routes are closed to use. Land ownership may not reflect the most recent acquisitions, especially in the Ocotillo Wells RA and the Borrego Badlands MA where the California Department of Parks and Recreation has been actively acquiring lands. Map 11 is included to show details of Bureau of Reclamation lands in Arizona. Note that the map scales vary greatly.

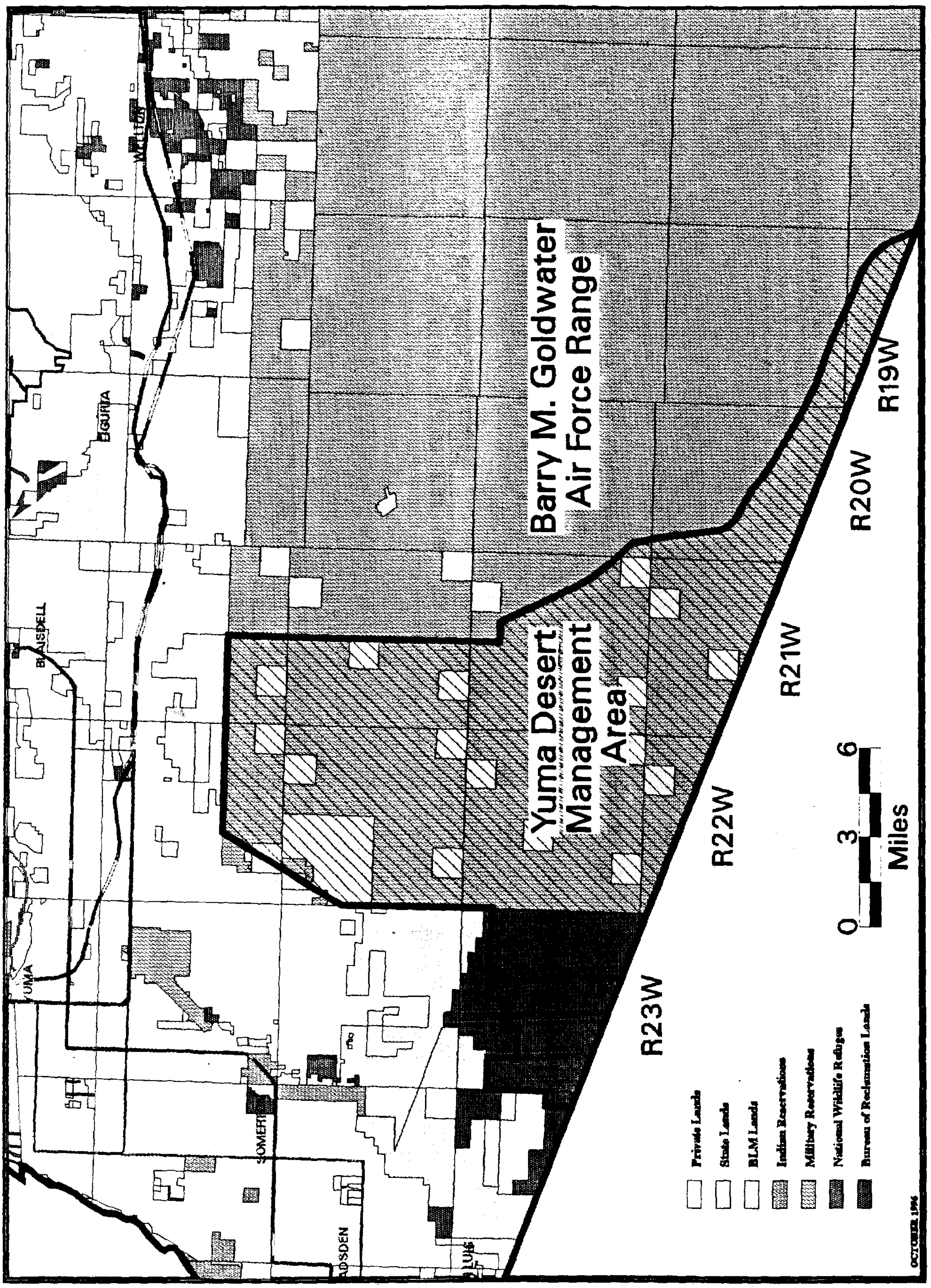


Figure 3. Map of proposed Yuma Desert Flat-tailed Horned Lizard Management Area. (One inch equals 4.8 miles; Mapscale about 1:300,000)

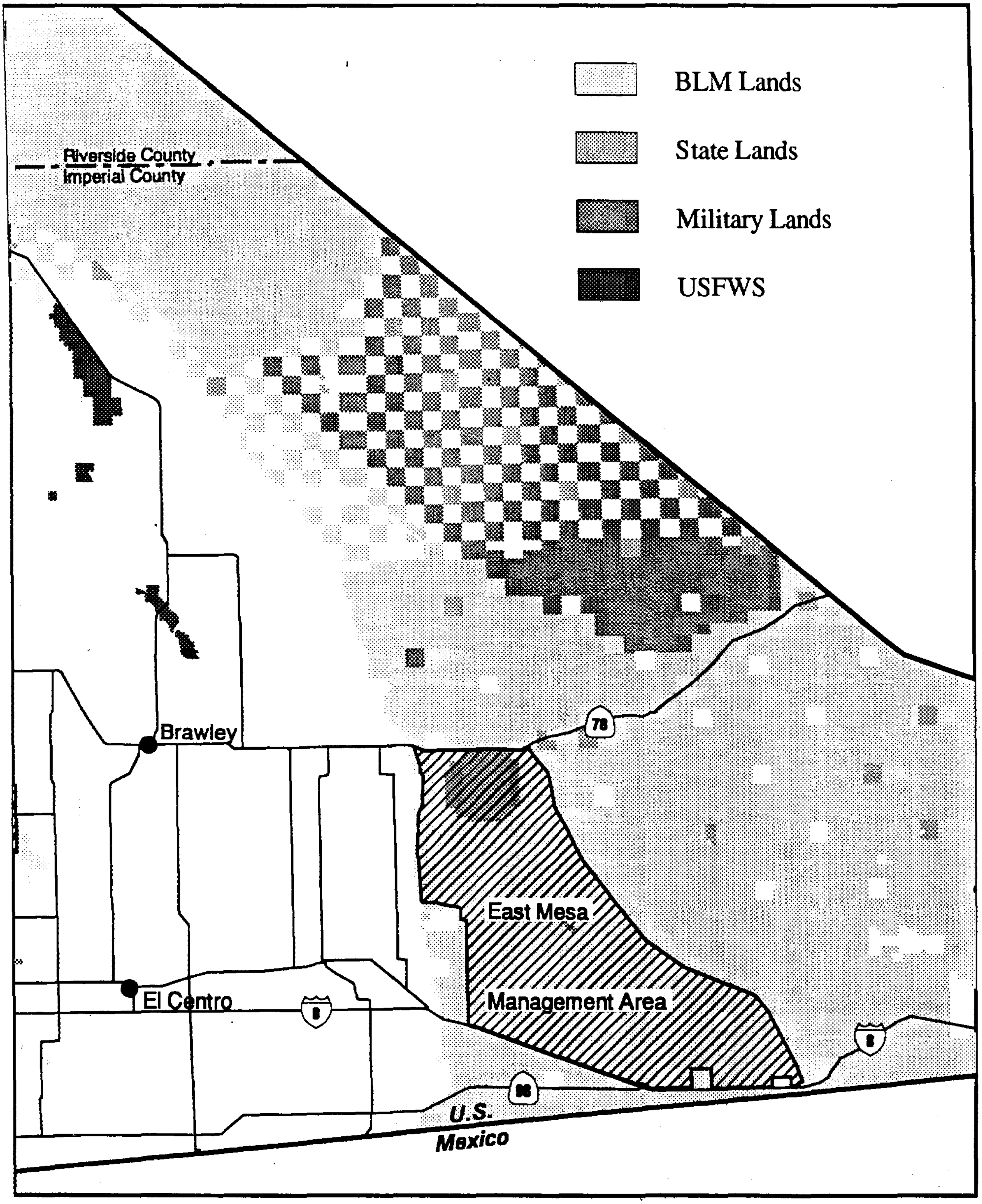


Figure 4. Map of proposed East Mesa Flat-tailed Horned Lizard Management Area (One inch equals 7.9 miles; Mapscale 1:500000).

Figure 5.
East Mesa Management Area

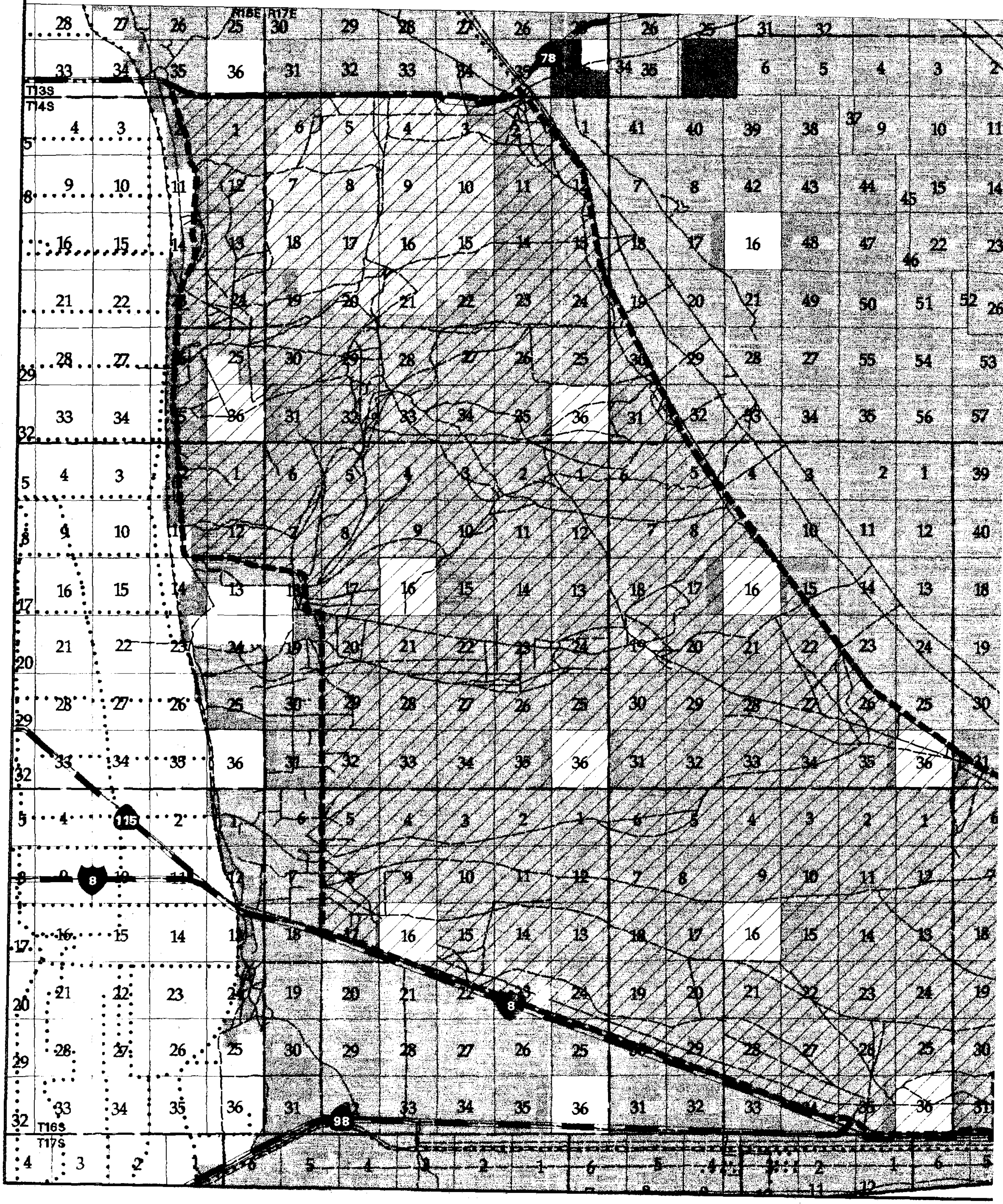
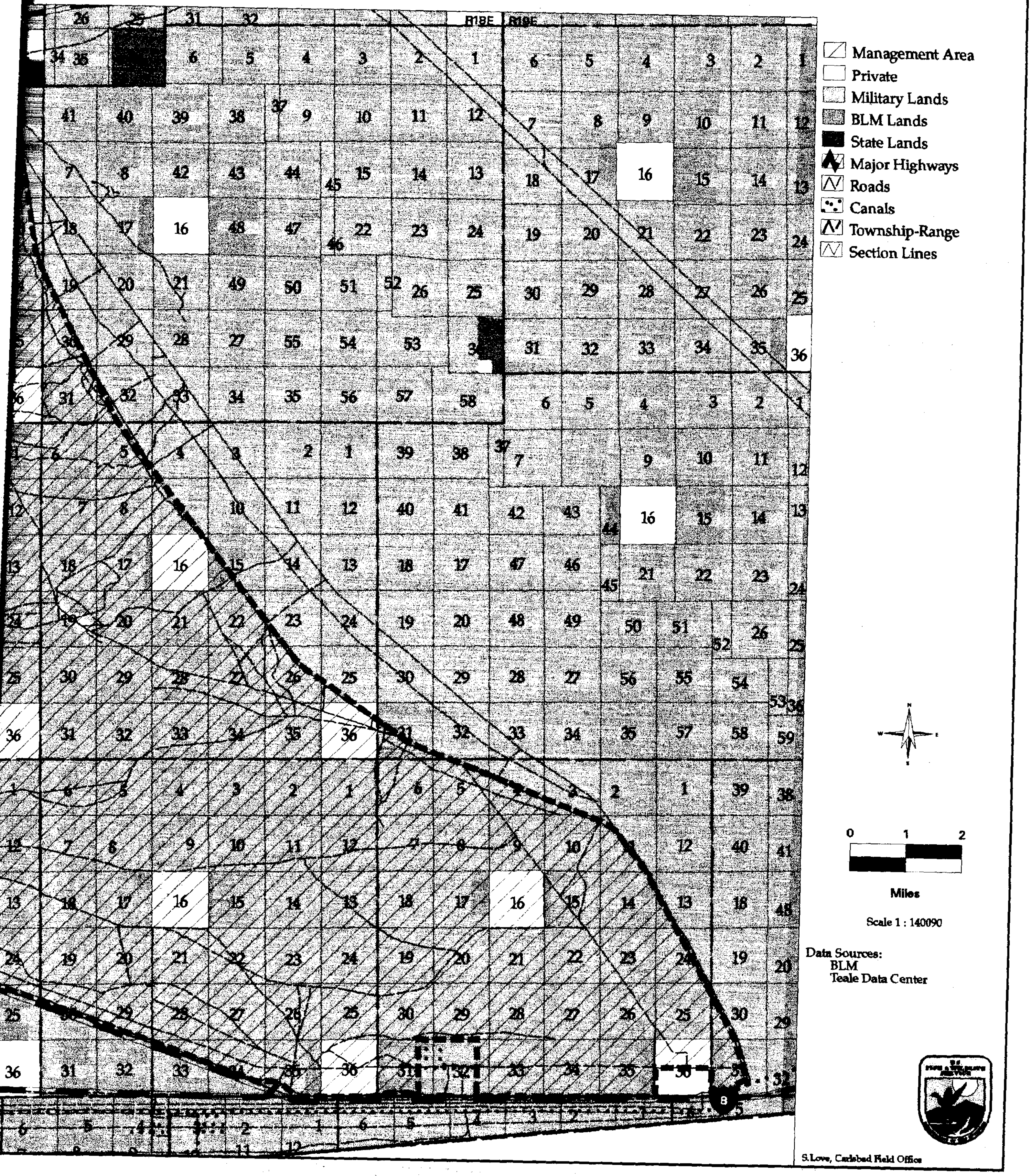


Figure 5.

t Mesa Management Area



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Data Sources:
BLM
Teale Data Center

S.Love, Carlsbad Field Office

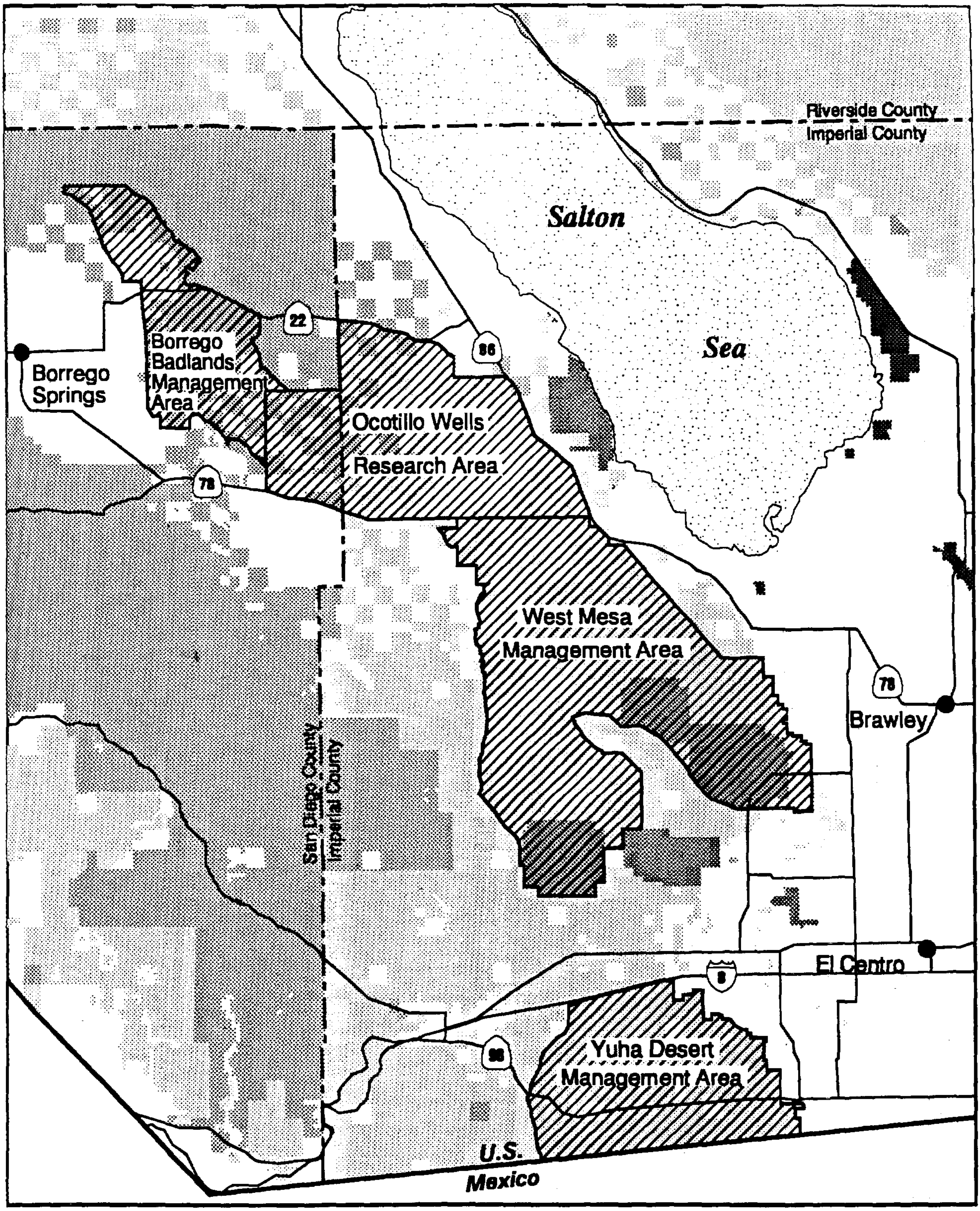

Figure 6. Map of Proposed Yuha Desert, West Mesa, and Borrego Badlands Flat-tailed Horned Lizard Management Areas and proposed Ocotillo Wells Research Area (One inch equals 7.9 miles; Mapscale 1:500000).

Figure 7.
West Mesa Management Area

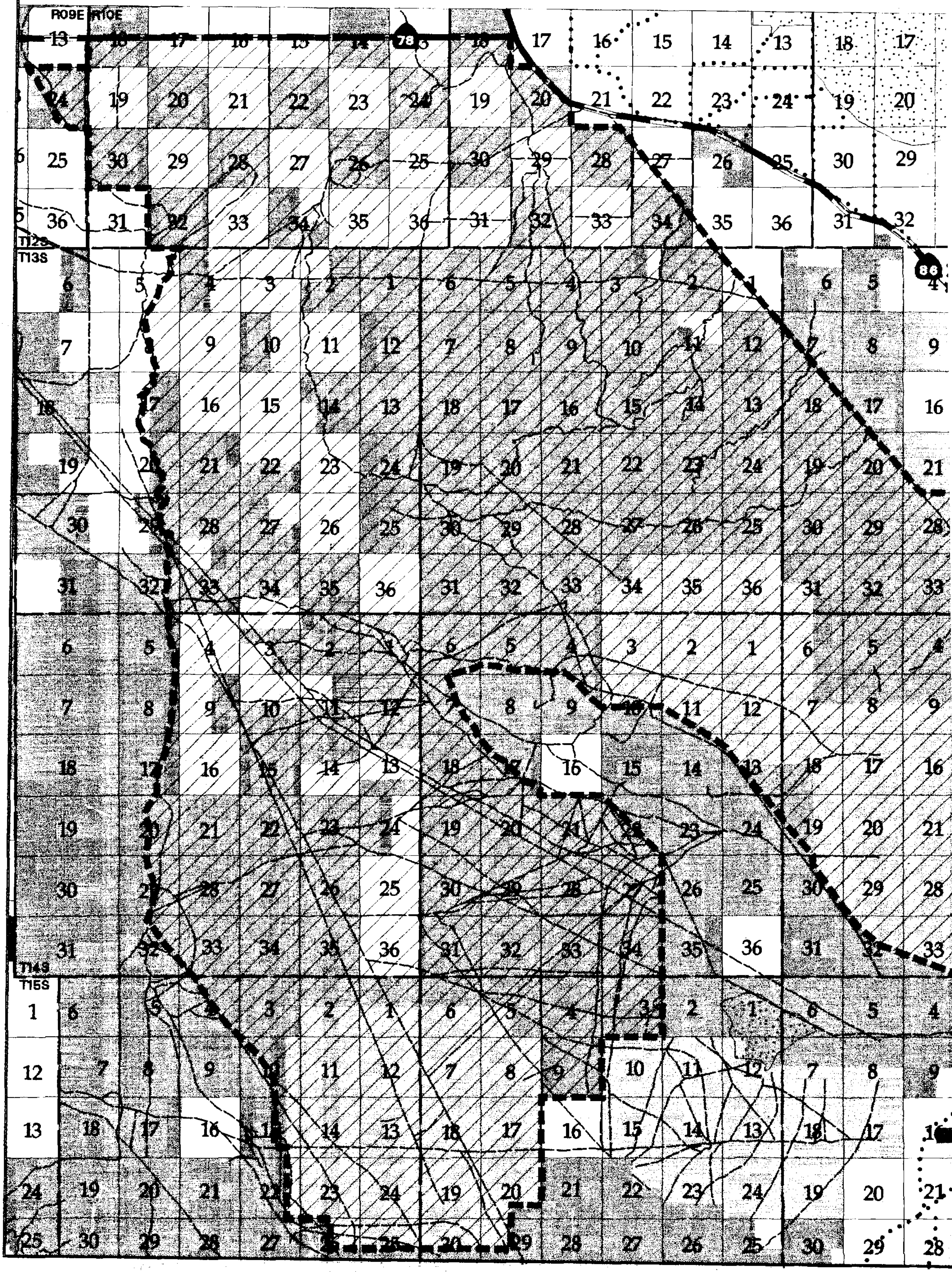

Figure 7.
West Mesa Management Area

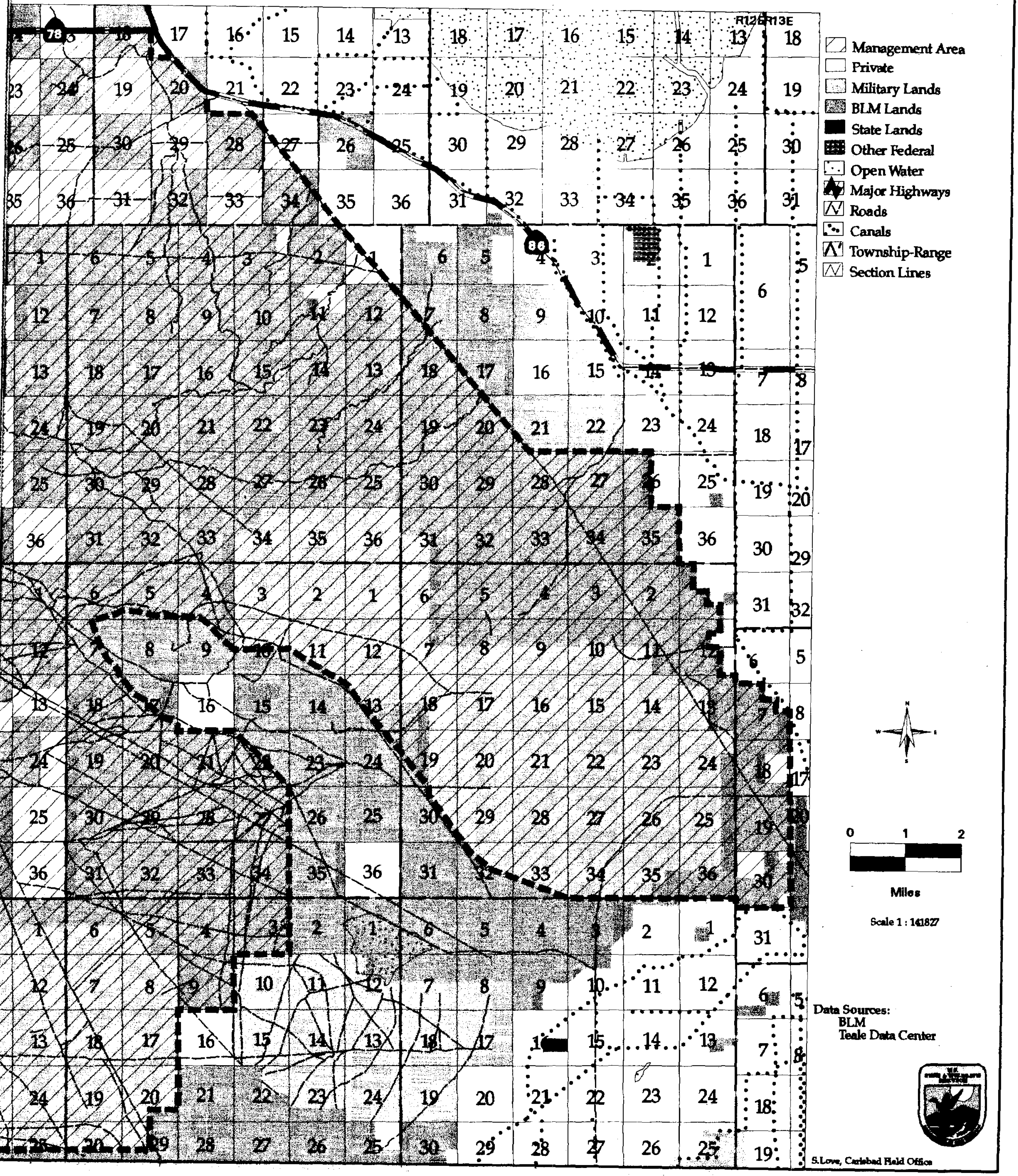

Figure 8.
Yuha Desert Management A

8.

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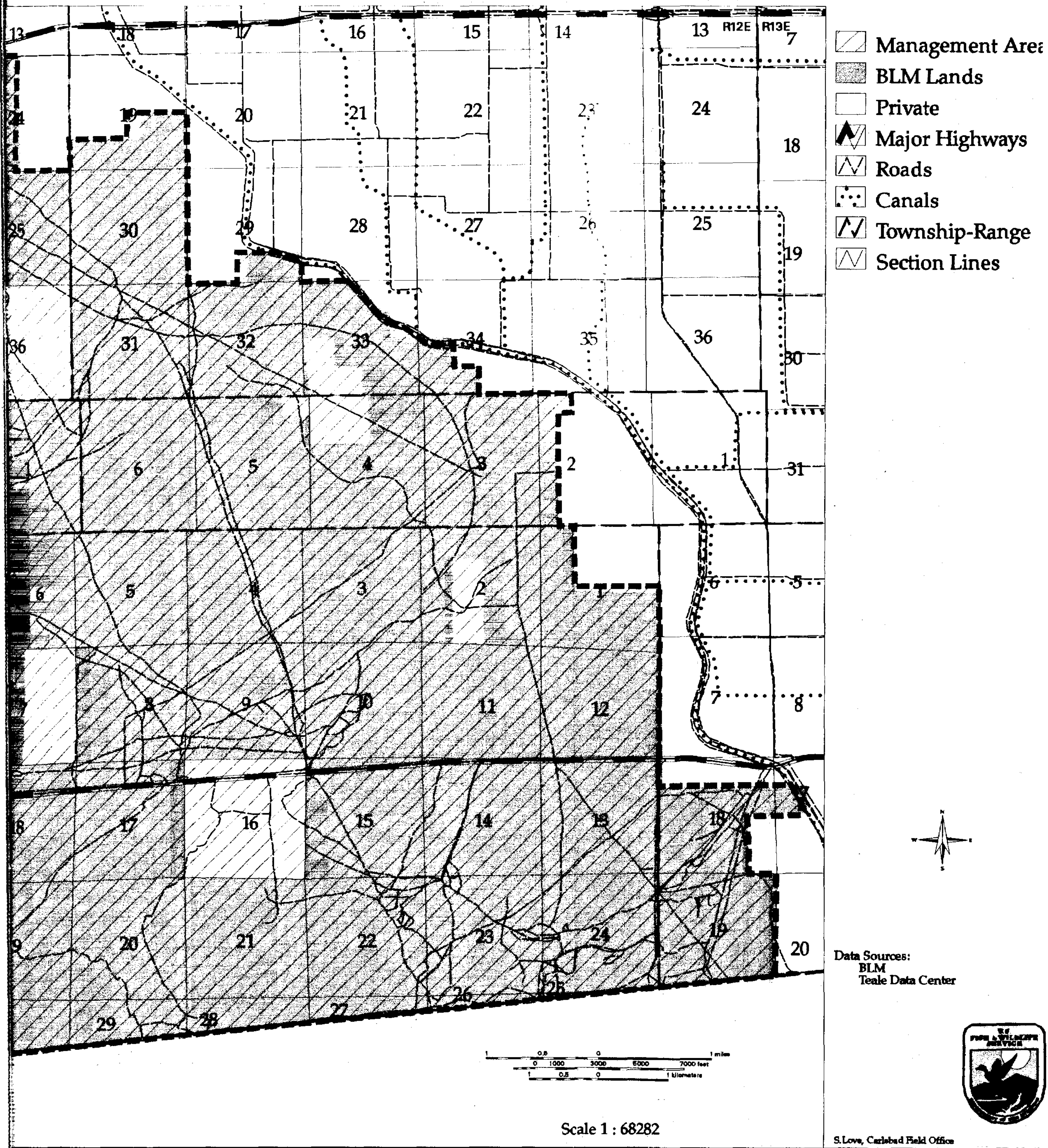

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Teale Data Center

Scale 1 : 68282

S.Love, Carlsbad Field Office

Figure 9.
Borrego Badlands Management Area

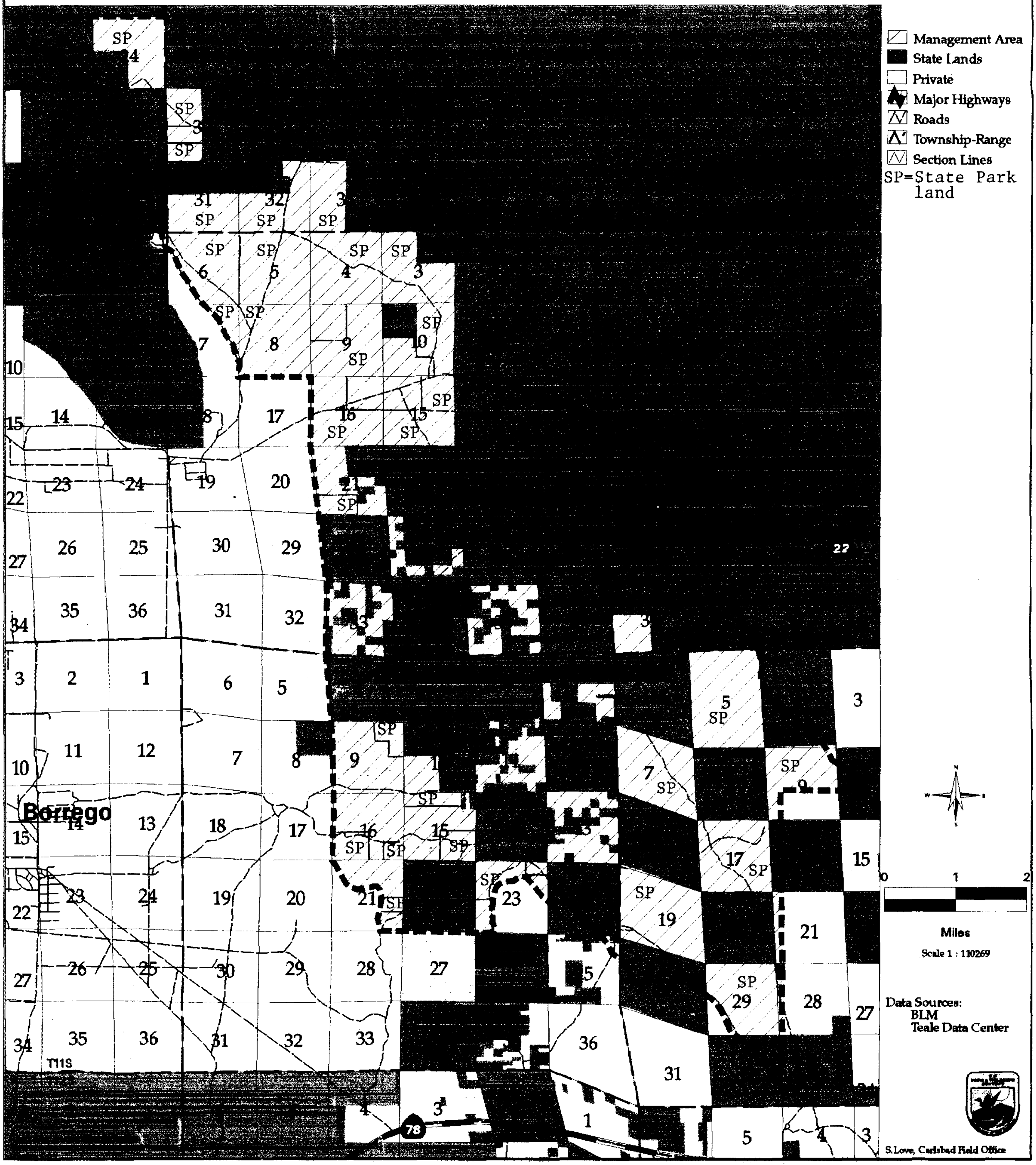
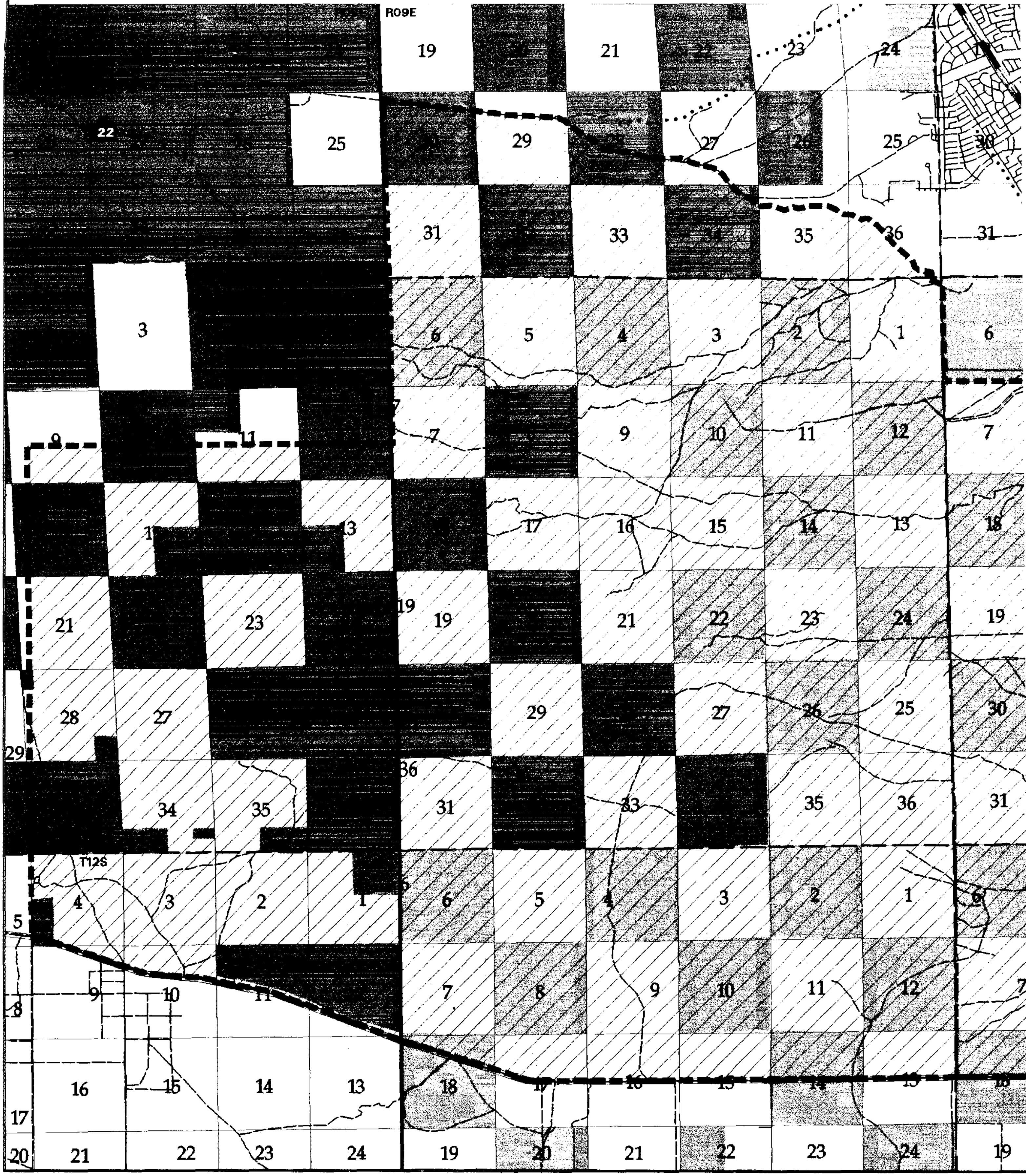
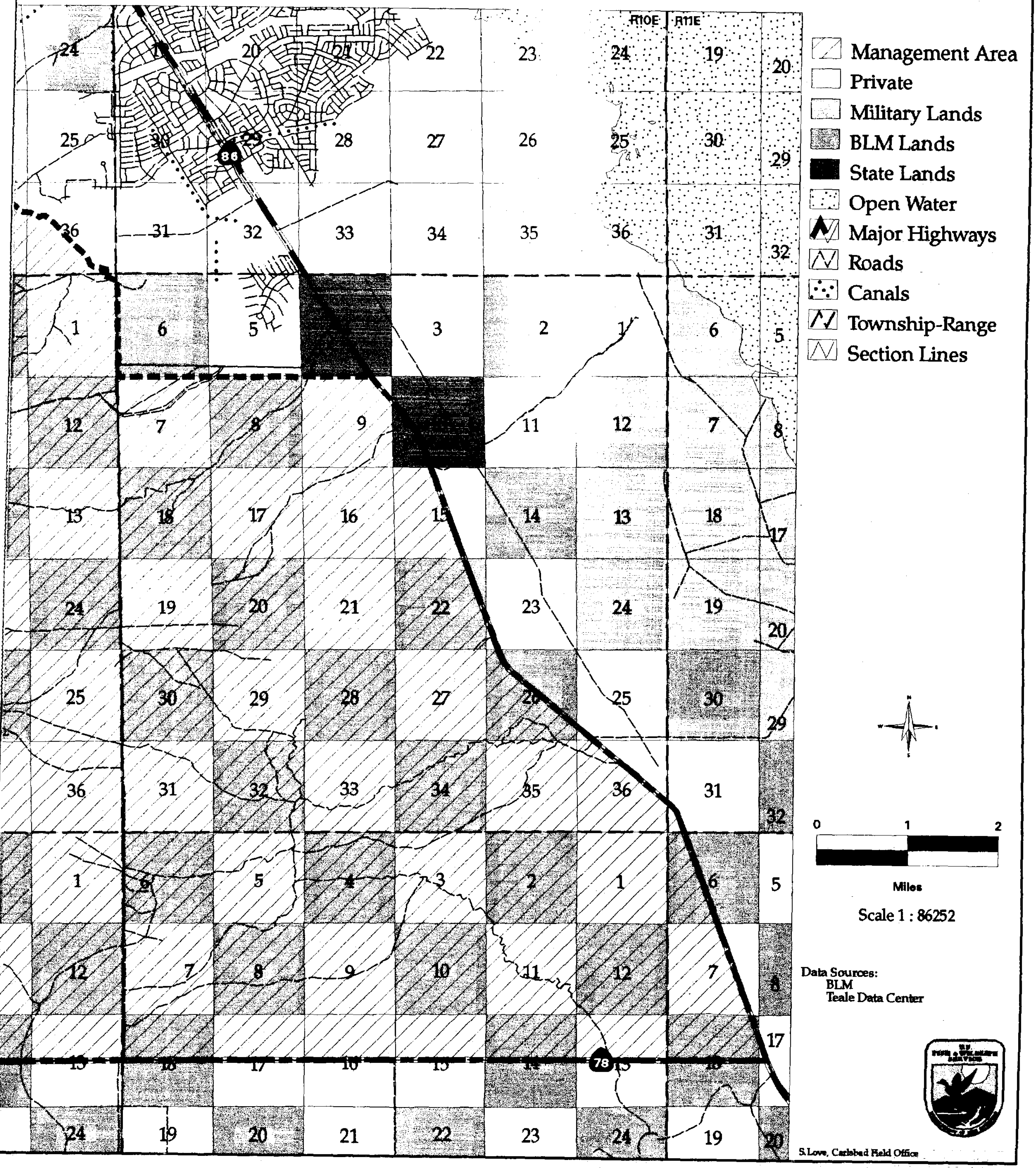


Figure 10.
Ocotillo Wells Research Area



10.

esearch Area



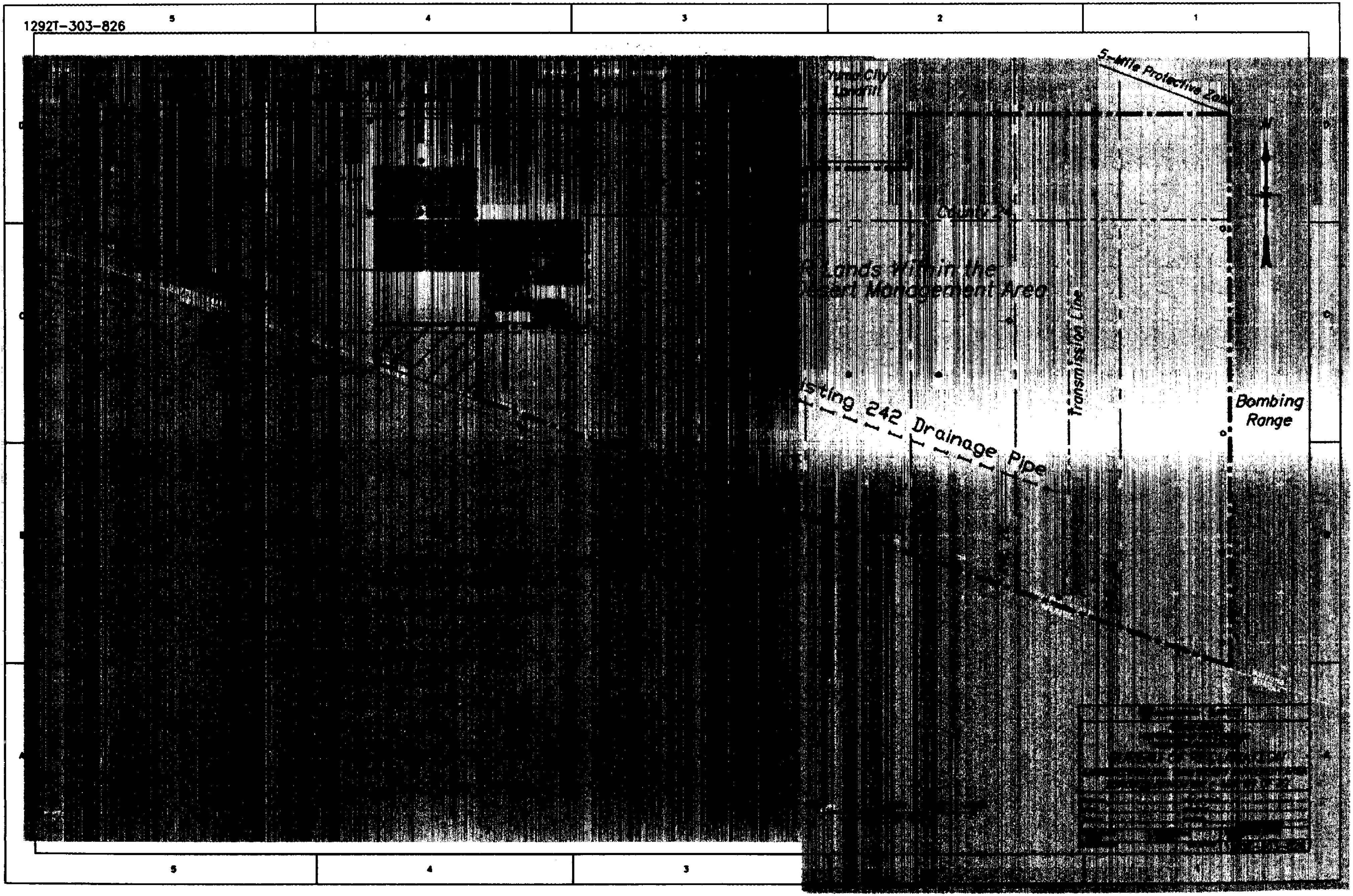


Figure 11. Bureau of Reclamation lands in Yuma Desert Management Area.

APPENDIX 3

List of Standard Mitigation Measures for Flat-tailed Horned Lizard

The following mitigation measures are to be incorporated into all surface-disturbing projects where applicable. The measures are to be modified to conform with the nature of the project.

1. Within flat-tailed horned lizard management areas and the research area, construction in areas unsuitable for burrowing by flat-tailed horned lizards shall be limited to the dormant period (November 15 through February 15) for the flat-tailed horned lizard.

2. A worker education program shall be developed and implemented. Wallet-cards summarizing this information shall be provided to all construction and maintenance personnel. The education program shall include the following aspects at a minimum:
   - biology and status of the flat-tailed horned lizard,
   - protection measures designed to reduce potential impacts to the species,
   - function of flagging designating authorized work areas,
   - reporting procedures to be used if a flat-tailed horned lizard is encountered in the field, and
   - importance of exercising care when commuting to and from the project area to reduce mortality of flat-tailed horned lizards on roads.

3. To the extent possible, surface-disturbing projects shall be located outside of flat-tailed horned lizard management areas and the research area. If a project must be located within a management area or the research area, effort shall be made to locate the project in a previously disturbed area or in an area where habitat quality is poor. A survey of the project site shall be conducted prior to construction in order to assist in locating the project.

4. Prior to project initiation, an individual shall be designated as a field contact representative (FCR). The FCR shall have the authority to ensure compliance with protective measures for the flat-tailed horned lizard and will be the primary agency contact dealing with these measures. The FCR shall have the authority and responsibility to halt activities that are in violation of these terms and conditions.

5. All project work areas shall be clearly flagged or similarly marked at the outer boundaries to define the limit of work activities. All construction and restoration workers shall restrict their activities and vehicles to areas which have been flagged to eliminate adverse impacts

to the flat-tailed horned lizard and its habitat. All workers shall be instructed that their activities are restricted to flagged and cleared areas.

6. Within MAs [or outside MAs if judged necessary], a biological monitor shall be present in each area of active construction throughout the work day from initial clearing through habitat restoration, except where the project is completely fenced and cleared of horned lizards by a biologist (see Measure 13). The biological monitors shall have sufficient education and field experience or training with the flat-tailed horned lizard to understand its biology and behavior. The monitor(s) shall perform the following functions:

    a. Ensure that all project-related activities are in compliance with these measures. The biological monitor shall have the authority and responsibility to halt activities that are in violation of these terms and conditions.

    b. Examine construction areas periodically (at least hourly when surface temperatures exceed 30° C) for the presence of flat-tailed horned lizards. In addition, all hazardous sites (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of flat-tailed horned lizards prior to backfilling.

    c. Work with the construction supervisor to take steps, as necessary, to avoid disturbance to flat-tailed horned lizards and their habitat. If avoiding disturbance to a flat-tailed horned lizard is not possible or if a flat-tailed horned lizard is found trapped in an excavation, the affected lizard shall be captured by hand and relocated.

7. Only persons authorized by the California Department of Fish and Game [California] or the Arizona Game and Fish Department [Arizona] shall be permitted to handle flat-tailed horned lizards.

8. If surveys are required, they must be conducted as specified in the interim survey protocol (Appendix 7) or an alternative subsequently approved by the Management Oversight Group.

9. Relocated flat-tailed horned lizards shall be placed in the shade of a large shrub a short distance from the construction zone and in the direction of undisturbed habitat. If surface temperatures in the sun are less than 30° C or exceed 50° C, the biologist or FCR, if authorized to handle, shall hold the flat-tailed horned lizard for later release. Initially, captured flat-tailed horned lizards shall be held in a cloth bag, cooler, or other appropriate clean, dry container from which the lizard cannot escape. Lizards shall be held at temperatures between 25 and 35° C and shall not be exposed to direct sunlight. Release shall occur as soon as possible after capture and during daylight hours when surface temperatures range from 32 to 40° C. If such conditions do not occur within 48 hours of capture, the lizard shall be transferred to a terrarium containing at least 2 inches of sand

from the project area. The terrarium shall be maintained at 10 to 20° C until conditions at the site are appropriate for release. Lizards shall be allowed to acclimate to higher surface temperatures prior to release. The biologist shall be allowed some judgement and discretion to ensure that survival of flat-tailed horned lizards found in the project area is likely.

10. Within flat-tailed horned lizard habitat, the area of disturbance of vegetation and soils shall be the minimum required for the project. [If possible, specify a maximum disturbance allowable based on the specifics of the project.] Clearing of vegetation and grading shall be minimized. Wherever possible, rather than clearing vegetation and grading the right-of-way, equipment and vehicles shall use existing surfaces or previously disturbed areas. Where grading is necessary, surface soils shall be stockpiled and replaced following construction to facilitate habitat restoration. To the extent possible, disturbance of shrubs and surface soils due to stockpiling shall be minimized.

11. Existing roads shall be used for travel and equipment storage whenever possible.

12. Where feasible and desirable, in the judgement of the lead agency, newly created access routes shall be restricted by constructing barricades, erecting fences with locked gates at road intersections, and/or by posting signs. In these cases, maintenance of access control structures and facilities shall be maintained by the project proponent for the life of the project and until habitat restoration is completed, including monitoring.

13. Sites of permanent or long-term projects in MAs where continuing activities are planned and where flat-tailed horned lizard mortality could occur shall be enclosed with flat-tailed horned lizard barrier fencing to prevent lizards from wandering onto the project site where they may be subject to collection, death, or injury. Barrier fencing should consist of 0.5-inch wire mesh fastened securely to posts. The wire mesh should extend at least 12 inches above the ground and 12 inches below the surface of the ground. Any gates or gaps in the fence should be constructed to prevent lizard entry. After clearing the area of horned lizards, no on-site monitor is required (see Measure 6).

14. A project-specific habitat restoration plan shall be developed by the project proponent under approval by the lead agency. The plan shall consider and include as appropriate the following methods: replacement of topsoil, seedbed preparation, fertilization, seeding of species native to the project area, noxious weed control, and additional erosion control. Generally, the restoration objective shall be to return the disturbed area to a condition that will perpetuate previous land use. Periodic inspection of the restored area shall be conducted by the project proponent. Restoration shall include eliminating any hazards to flat-tailed horned lizards created by construction, such as holes and trenches in which lizards might become entrapped. Disturbance of existing perennial shrubs during restoration shall be minimized, even if such shrubs have been crushed by construction activities.

APPENDIX 4

Compensation Formula

Compensation shall be required to offset the residual effects of projects affecting flat-tailed horned lizard habitat. Residual effects are those that remain after all reasonable on-site mitigation measures are incorporated into a project. The goal of compensation is to make a project's net effect neutral or positive to the flat-tailed horned lizard. If the adverse effects of an action can be fully mitigated (no net adverse impact) or if an action would result in no adverse effects on habitat, then compensation is not required. Adverse residual effects to habitat shall be compensated through acquisition of habitat within an MA or contribution to a compensation fund that will be used to acquire lands and enhance habitat in MAs. Funds shall not be used for law enforcement or monitoring. Priorities for use of compensation funds shall be determined by the Flat-tailed Horned Lizard Management Oversight Group (FTHL MOG).

The compensation formula to be applied for disturbance of habitat within a management area is presented in this appendix. The multiplying factor (M) is multiplied by the number of acres disturbed to arrive at the compensation acreage. If the land to be disturbed is within a management area, the multiplying factor will range from 3 to 6. Outside of the management areas, but within occupied habitat as determined according to the survey protocol (see Appendix 7), the multiplication factor shall be 1. Compensation shall not be required for disturbance of areas that clearly do no support the species or desert scrub communities, such as agricultural and urban areas. A detailed description of how to evaluate each factor may be found in "Compensation for the Desert Tortoise" (Desert Tortoise Compensation Team, 1991).

Signatories to the Flat-tailed Horned Lizard Conservation Agreement will not be required to compensate for the conservation activities defined on pages 43-48 of the Management Strategy. In addition, the establishment of the MAs with a 1 percent cap (Planning Action 2.2.1) on new surface disturbance represents compensation for agency activities that may disturb flat-tailed horned lizard habitat while limiting the activities of signatory agencies on their lands. The 1 percent cap on new surface disturbance within MAs will remain in effect for 5 years, after which the 1 percent cap will be reviewed by the MOG and amended, if necessary, based on more recent information. Each agency may permit disturbances of up to 1 percent of the land that the agency manages within the MA. Additions to the 242 Well Field by the Bureau of Reclamation and existing, on-going activities at Department of Defense facilities (for the Marine Corps Base - Yuma, these activities are described in the EIS for the Yuma Training Range Complex) do not count towards this 1 percent. If disturbance greater than the 1 percent cap is desired, the agency may request use of the 1 percent disturbance allowance of other signatory agencies in the MA.

All surface disturbance within each MA must be reported to the ICC, which will report to the MOG. Federal agencies will comply with the National Environmental Policy Act and the Council on Environmental Quality guidelines in regards to any further compensation. State agencies will follow procedures in their respective environmental laws, if any. If compensation beyond the level of contribution by an agency to an MA is necessary, the agency shall use the compensation formula to determine the amount of compensation. Compensation funds shall be targeted for habitat acquisition and enhancement in California and for habitat acquisition and accelerated implementation of management actions in Arizona.

If it is desirable or necessary to convert the compensation acreage to a monetary equivalent, the fee is multiplied by the estimated cost to purchase land. Each agency may develop its own estimate of land cost in accordance with standard policies and procedures. The agency to receive the compensation land or fee shall be determined through coordination among the permitting agencies. Typically, the compensation fee or land will go to the agency that predominantly manages the nearest management area. Each of the signatories shall maintain an accounting of all compensation funds paid and collected. These accountings shall be incorporated into the annual monitoring report. The Bureau of Land Management shall act as a clearinghouse for compensation funds and accounting data.

The multiplying factor (M) is computed as follows:

$$M = C + A + G + E + D$$

where the factors are evaluated as shown below:

C		**Classification of habitat:**	
	a)	The lands disturbed are in a management area.	3
	b)	The lands disturbed are outside a management area but within existing flat-tailed horned lizard habitat as determined by methods in Appendix 7. (Do not add the following factors.)	1
A		**Adjacent habitat impacts:**	
	a)	Adjacent lands will not be affected.	0
	b)	Adjacent habitat will receive direct or indirect deleterious impacts.	0.5
G		**Growth inducing effects within flat-tailed horned lizard habitat:**	
	a)	The project will have no growth inducing effects.	0
	b)	The project will have growth inducing effects.	0.5
E		**Existing disturbance on site:**	
	a)	There is moderate to heavy existing habitat disturbance.	0
	b)	There is little or no existing habitat disturbance.	1
D		**Duration of effect:**	
	a)	The effects of the project are expected to be short term (< 10 years).	0
	b)	The effects of the project are expected to be long term (> 10 years).	1

APPENDIX 5

List of Participants

Flat-tailed Horned Lizard Rangewide Strategy Working Group

Primary Workgroup participants are indicated by an "*." Others participated in one or more meetings, contributed written material, or provided review comments:

David Amme	California Department of Parks and Recreation, Off-Highway Motorized Vehicle Recreation Division (OHMVRD), Sacramento, California
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*John Crow	United States Navy, El Centro Naval Air Facility, Public Works Department, El Centro, California
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*Larry Foreman	Bureau of Land Management, California Desert District, Riverside, California
*Cliff Gruenberg	Imperial County, Agriculture Commission, El Centro, California
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*Susanna Henry	Bureau of Land Management, Yuma Field Office, Yuma, Arizona
Bob Henry	Arizona Game and Fish Department, Yuma, Arizona
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Linden Piest	Arizona Game and Fish Department, Yuma, Arizona

Robert Powell	County of Imperial, Agricultural Commission, El Centro, California
Terry Reed	Bureau of Land Management, El Centro Resource Area, El Centro, California
Michael Remington	Imperial Irrigation District, Imperial, California
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*Jim Romero	Bureau of Reclamation, Yuma Area Office, Yuma, Arizona
*Jim Rorabaugh	U. S. Fish and Wildlife Service, Phoenix State Office, Phoenix, Arizona
Herman Schneider	Imperial Valley Environmental Task Force, San Diego, California
*Brenda Smith	Bureau of Land Management, Yuma Field Office, Yuma, Arizona
*Dave Smith	Bureau of Land Management, Yuma Field Office, Yuma, Arizona
Richard Thiery	Coachella Valley Water District, Coachella, California
*Sandy Vissman	U. S. Fish and Wildlife Service, Carlsbad Field Office, Carlsbad, California
*Shana Watkins	California Department of Parks and Recreation, OHMVRD, Sacramento, California
Les Weeks	California Department of Parks and Recreation, OHMVRD, Sacramento, California
Gavin Wright	Bureau of Land Management, Palm Springs-South Coast Resource Area, Palm Springs, California

APPENDIX 6

Flat-tailed Horned Lizard Conservation Team - Role and Participants

Role in the Development of the Rangewide Management Strategy

The Flat-tailed Horned Lizard Conservation Team was formed as an advisory group to the Rangewide Strategy Working Group. The purpose of the Team was to ensure that the Strategy was based upon the best biological information available. The Team included most investigators who have conducted significant research on the species since 1978. The Team also included other experts in lizard ecology, herpetology, and conservation biology. The Team was charged with carrying out the following tasks:

1. Evaluate the need for and usefulness of conducting a population viability analysis for the flat-tailed horned lizard,
2. Prepare a population viability analysis, if appropriate,
3. Identify research needed to ensure effective conservation of the flat-tailed horned lizard,
4. Identify monitoring activities and protocols needed to guide and document implementation of the Rangewide Strategy.
5. Assist the Rangewide Strategy Working Group in the application of the principles of conservation biology to size and number of management areas and management needs within the management areas, and
6. Review and provide comments to the Working Group on drafts of the Rangewide Management Strategy.

In response to these tasks, the Team reviewed and commented on several drafts of the Rangewide Management Strategy, developed research priorities (see planning action 8), developed an interim survey protocol (Appendix 7), and prepared a population viability analysis ("Flat-tailed Horned Lizard, *Phrynosoma mcallii*, Population Viability Analysis: Implications for Conservation Strategies and Research Priorities").

Participants

Wendy Hodges	Department of Zoology, University of Texas, Austin, Texas
Mark Fisher	University of California, Deep Canyon Desert Research Center, Palm Desert, California
Andy Holycross	Zoology Department, Arizona State University, Tempe, Arizona
Jeff Howland	Arizona Game and Fish Department, Non-Game Branch, Phoenix, Arizona
Jeffrey Lovich	National Biological Service, Palm Springs Field Station, North Palm Springs, California
Philip Medica	National Biological Service, Las Vegas, Nevada
Allen Muth	University of California, Deep Canyon Desert Research Center, Palm Desert, California
Jim Rorabaugh	U. S. Fish and Wildlife Service, Phoenix State Office, Phoenix, Arizona
Frederick Turner	Santa Monica, California
Bernie Wone	Department of Biological Sciences, San Jose State University, San Jose, California
Laurie Vitt	Department of Zoology, University of Oklahoma, Norman, Oklahoma

APPENDIX 7

Flat-tailed Horned Lizard Interim Survey Protocol

Introduction

Several different methods have been developed and used beginning in 1979 to determine relative abundance of the flat-tailed horned lizard. These methods have involved counting horned lizard scat and/or flat-tailed horned lizards during walking surveys (Turner and Medica 1982, Rorabaugh *et al.* 1987, BLM and CDFG 1990, Wone *et al.* 1991). All of these methods assume a correlation between relative abundance and scat and/or lizard counts; however, limited data exist to test this assumption. Research is currently underway on the Goldwater Range in Arizona to more rigorously test scat counts and other methods for determining relative abundance. Until that research is complete, the following interim survey protocol should be used. The objective of this protocol is to provide an assessment of flat-tailed horned lizard presence or absence at specific sites. Absence cannot be confirmed with this protocol, but for planning purposes negative survey results provide reasonable assurance that the species is not present. If the results indicate the species is present in a proposed project area, that project should be subject to appropriate mitigation and compensation.

Areas of Known Occurrence

Based on flat-tailed horned lizard locality records, resource and land management agencies should map areas of known flat-tailed horned lizard occurrence. In these areas, if major habitat alteration or conversion has not taken place since the species was detected, assume it is present.

Areas of Unknown Occurrence

Resource and land management agencies should map areas in which the presence of the species is in question. These areas would include potentially suitable habitat within or on the edge of the species' range in which the species is undocumented. Where the presence or absence of the flat-tailed horned lizard needs to be determined, the following surveys shall be conducted:

Scat and Horned Lizard Surveys

Walking surveys shall be conducted, including separate surveys for horned lizard scat and horned lizards. Transects shall consist of parallel, linear routes evenly-spaced across the survey area. Each route shall be traversed by a single worker. Scat and lizard survey routes shall be alternated. During surveys for scat, workers should focus on finding scat within a swath approximately 1.3 meters (50 inches) in width (but scat observed outside of the 1.3 meter transect swath shall also be noted). Scat between 5.5 and 10 mm in diameter that contain predominantly ant parts shall be considered horned lizard scat.

In large-scale survey efforts involving walking surveys, flat-tailed horned lizard encounter rates have averaged about one lizard per 10 hours of survey time (Hodges 1995, Wright 1993, Wone *et al.* 1991, Rorabaugh *et al.* 1987, Turner and Medica 1982). Thus, to provide a reasonable chance of finding a flat-tailed horned lizard, a minimum of 10 hours of survey effort shall be expended in each section (640 acres) surveyed. Survey effort in portions of sections shall be reduced proportionally (i.e., five hours of surveys in a half section). However, in areas of less than 247 acres (1 km^2), no less than four hours of surveys shall be conducted.

Although investigators shall focus on finding either horned lizard scat or horned lizards, both scat and horned lizards shall be noted during either type of survey. All surveys shall be conducted from April through September. Lizard surveys shall be conducted when surface temperatures in the sun range from 35 to 50°C. Scat surveys shall not be conducted for at least 12 days after heavy rains, hailstorms, or strong winds of an intensity sufficient to move considerable amounts of sand across roads or that damage signs and trees.

Road Surveys

Flat-tailed horned lizards are often easier to detect on roadways than during walking surveys. Thus, road surveys shall also be conducted and shall consist of driving all roads in or near the survey area and recording any horned lizards observed. Workers should drive very slowly (no more than 10 miles per hour on unpaved roads) to allow detection of lizards. Road surveys should be conducted from April through September primarily in the morning when substrate temperatures adjacent to the road and in the sun range from 35 to 50°C.

Data Records

The location of transects, and each flat-tailed horned lizard, desert horned lizard, and horned lizard scat found during walking or road surveys shall be recorded on maps of scale no less than 1:24,000. Date and time observed, and (if captured) sex and snout-vent length shall be recorded for each horned lizard observed. A 35-mm color photograph with the lizard filling at least half of the frame shall be taken of each horned lizard. A sample of horned lizard scat shall be collected. A qualitative assessment of the habitat should be conducted, including listing dominant perennial and annual plants, substrate types, and level of disturbance (note roads, OHV tracks, vegetation removal, etc.) Photographs can be used to document habitat characteristics. Survey dates, and beginning and ending times and surface temperatures of each survey shall be recorded. Any blocks of time not actually spent conducting the survey shall be subtracted from the total survey time. Data collected during walking surveys shall be recorded on the attached sample survey form. Survey results shall be detailed in a report to which all survey forms and data on lizards, including photographs and maps, shall be appended.

Required Authorizations and Qualifications

Only persons authorized by Arizona Game and Fish Department (in Arizona) or California Department of Fish and Game (in California) shall handle flat-tailed horned lizards. Only qualified investigators shall conduct walking surveys. Investigators shall have documented training and experience in surveying for flat-tailed horned lizards and their scat, or shall obtain training from an experienced investigator. Training for workers conducting scat counts shall consist of conducting surveys in the field for at least one full workday with an experienced investigator and demonstrating competency by counting at least 90 percent of the scat counted by the experienced investigator on a transect on which the trainee walks in front of the experienced investigator and on which at least 20 scat are observed by the experienced investigator. Investigators shall also be trained to distinguish flat-tailed horned lizards from desert horned lizards. Prior to any survey effort, a survey proposal shall be developed and approved by Arizona Game and Fish Department (in Arizona), California Department of Fish and Game (in California), and/or by the State or Federal agency that manages the lands to be surveyed.

Interpretation of Survey Results

The following criteria shall be used to derive presence or absence of the flat-tailed horned lizard from the survey results:

Species present if:

1. Flat-tailed horned lizards are found; or
2. Horned lizard scat is found and the desert horned lizard is unlikely to occur at the project site; or

3. Flat-tailed horned lizards have been found within two miles and the habitat is suitable and continuous between the project site and the site of the locality record.

Species absent if:

1. No scat or horned lizards are found; and
    a. No flat-tailed horned lizards have been found within two miles of the project site; or
    b. Flat-tailed horned lizard locality record(s) exist within two miles, but the habitat is not continuous or suitable between the locality and project set; or

2. Scat is found, no flat-tailed horned are found, but desert horned lizards occur or are likely to occur, and
    a. No flat-tailed horned lizard locality record(s) exist within two miles of the project site, or
    b. Flat-tailed horned lizard locality record(s) exist within two miles, but the habitat is not continuous or suitable between the locality and project set.

If, based on the above analysis, flat-tailed horned lizards are deemed present, locality records, scat occurrence, and descriptions of habitat shall be used to delineate the extent of occupied habitat.

FLAT-TAILED HORNED LIZARD/SCAT TRANSECT RECORD

Project name: ________________ **Observer (complete name):** ________________

Transect type (circle): Lizard Scat Road **Transect number:** ______

Location: Quad ________________ T ______ R ______ Sec ____

Date (mm/dd/yy): ____________

Time (using 24-hour clock): Daylight time: no yes

Start time (hhmm): _____ End time (hhmm): _____

Total survey time (search time only) _____ min.

Surface temperature: °C °F (circle) Start: _____ End: _____

Cloud cover (%): Start: _____ End: _____

Dominant perennial plant species (sci. name): ________________________

Dominant annual plant species (sci. name): ________________________

Substrate (circle): clay silt sand gravel rock desert-pavement other ____________

Disturbance (circle): road veh-tracks veg-clearing structure other ______________

Flat-tailed Horned Lizards Observed

Sex (M/F)	SVL (mm)	Weight (g)	Surf. Temp. (°C/°F)	Time (hhmm)	Notes

Number of scat observed: ____

____ **TOTAL No.** _____

Number of scat observed outside 1.3-m swath: ________________________

Number of *P. platyrhinos* observed: ________________________

Comments: ____

____

APPENDIX 8

Overview of Techniques for Rehabilitation of Lands in Flat-tailed Horned Lizard Management Areas

The measures described below are intended to speed the rebuilding of soil structure and the restoration of the native flora and fauna. The techniques described below are not exhaustive. It is expected that new techniques will be developed, and the techniques described will be refined. For a summary of available literature, see Lovich (1993).

Alleviating soil compaction improves water infiltration and allows for plant root growth. Current methods for rehabilitating closed routes include ripping and scarifying compacted surfaces using farming implements such as tillers and disks pulled by tractors.

After the compacted surface is broken up, other implements can be used to smooth the rough surface and return it to its original contour. Among the equipment used are drag harrows with either spike-tines and flex-tines or link-chain harrows. Road berms may need to be broken up and leveled to visually eliminate the roadbed and to allow natural drainage of the area. Pitting or imprinting implements that can be pulled by a pickup truck or a tractor may also be used. A pitted soil surface allows plants to become more easily established by providing small areas where seeds and rainwater can be captured.

Planting native shrubs and/or seeding native plants to the prepared area may facilitate restoration. However, restoration in desert scrub communities is often unsuccessful, and restoration techniques are not well-studied in the very arid regions of the Sonoran Desert, where flat-tailed horned lizards occur (Bauder and Larigauderie 1991). Restoration at route intersections is especially important to discourage vehicle use. Planted seedlings also provide a barrier to traffic because plants will usually need to be protected by wire mesh cages for the first year.

When planting seedlings, a critical element of survival is the amount of root biomass the plant has when it is planted. The root biomass will keep the plant alive during the long hot summer. Some slow growing species, such as creosote bush (*Larrea tridentata*), may need to grow for one to two years before planting to acquire the necessary root mass to survive without watering. Other critical elements in successful restoration projects which use container stock include 1) spring planting, 2) proper conditioning at the nursery, 3) anti-herbivory cages around each plant, and 3) maintenance of the restoration project (Bauder and Larigauderie 1991). The National

Park Service at Joshua Tree National Park, Viceroy Gold Mine, and Organ Pipe National Monument has established very successful nurseries for desert plants.

Seeds from native plants can be collected nearby and broadcast over or placed in imprinted depressions in the newly prepared soil. Although irrigating may be possible in some small locations, the success of most seedings is dependent on unpredictable rainfall. Broadcast seeding is relatively inexpensive, and, if rainfall is fortuitous, plants may become established at a relatively high density and in a random pattern. Although the methods for seeding are varied, they may not accomplish the desired restoration. However, seeding techniques are less time consuming and much less expensive than planting seedlings and may, in some cases, be as effective. The success of seeding projects is increased if seeding occurs immediately before the rainy season, seeds are covered, a mulch is used, and seeds are collected near the restoration site (Bauder and Larigauderie 1991).

For additional copies of this report, contact:

Dr. Larry D. Foreman
U. S. Department of the Interior
Bureau of Land Management
6221 Box Springs Blvd.
Riverside, CA 92507
(909) 697-5387

APPENDIX C: DRAFT SEIR APPENDICES ERRATA

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Appendix D-5: Approved Jurisdictional Determination

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DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
5900 LA PLACE COURT
CARLSBAD, CALIFORNIA 92008

February 8, 2021

SUBJECT: Approved Jurisdictional Determination

Luis Carrazco
United States Gypsum
3810 West Evan Hewes Highway
Imperial, California 92251

Dear Mr. Carrazco:

I am responding to your request (File No. SPL-2014-00216-SAS) received November 17, 2020, for an approved jurisdictional determination (AJD) for the U.S. Gypsum Company Plaster City Quarry Expansion project site (lat 38.00388°N, long -116.07249 °W) located near the town of Ocotillo Wells, Imperial County, California

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, a permit would likely be required. The first test determines whether or not the proposed project is located within the Corps' geographic jurisdiction (i.e., it is within a water of the United States). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. This evaluation pertains only to geographic jurisdiction.

Based on available information, I have determined that waters of the United States do not occur on the review area identified in the enclosed delineation map titled "United States Gypsum Quarry Expansion Aquatic Resource Delineation". The basis for our determination can be found in the enclosed Approved Jurisdictional Determination (JD) form.

This letter includes an approved jurisdictional determination for the U.S. Gypsum Company Plaster City Quarry Expansion project site. If you wish to submit new information regarding this jurisdictional determination, please do so within 60 days. We will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. If you object to this or any revised or reissued jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) and Request for Appeal (RFA) form. If you wish to appeal this decision, you must submit a completed RFA form within 60 days of the date on the NAP to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDO
450 Golden Gate Ave.
San Francisco, CA 94102

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5 (see below), and that it has been received by the Division Office by **April 8, 2021**.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request, and is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Thank you for participating in the regulatory program. If you have any questions, please contact me at (760) 602-4834 or via e-mail at Kyle.J.Dahl@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

Kyle J. Dahl
Chief
San Diego and Imperial Counties Section

Enclosure(s)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: United States Gypsum Company, Luis Carrazco	File Number: SPL-2014-00216-SAS	Date: FEBRUARY 8, 2021

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

  APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

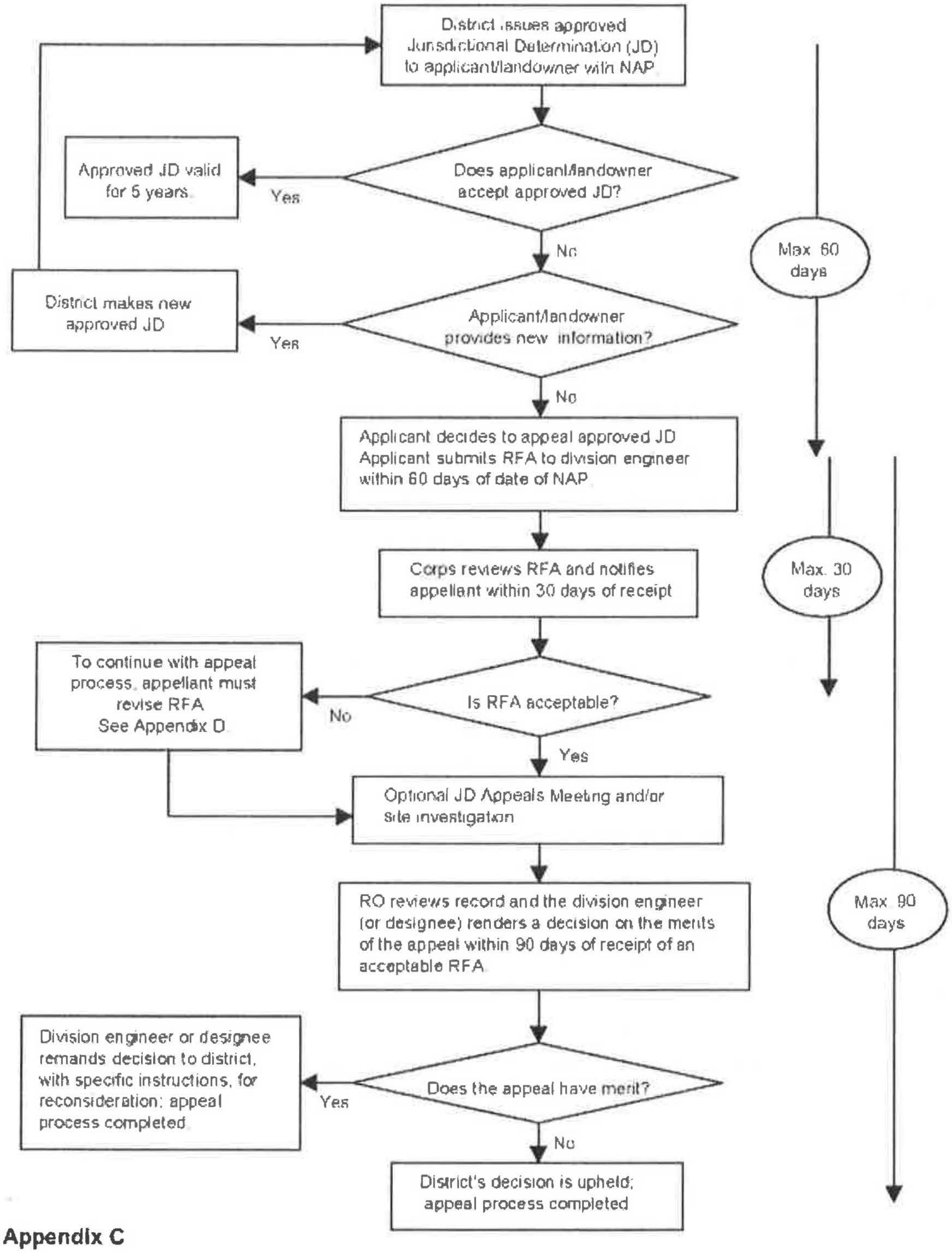
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Kyle Dahl U.S. Army Corps of Engineers Los Angeles District Phone: (760) 602-4834 Email: Kyle.J.Dahl@usace.army.mil	If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh Administrative Appeal Review Officer U.S. Army Corps of Engineers South Pacific Division 450 Golden Gate Ave. San Francisco, CA 94102 Phone: (415) 503-6574 Fax: (415) 503-6646 Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

§ 331.5 Criteria.

(a) *Criteria for appeal* —(1) *Submission of RFA.* The appellant must submit a completed RFA (as defined at §331.2) to the appropriate division office in order to appeal an approved JD, a permit denial, or a declined permit. An individual permit that has been signed by the applicant, and subsequently unilaterally modified by the district engineer pursuant to 33 CFR 325.7, may be appealed under this process, provided that the applicant has not started work in waters of the United States authorized by the permit. The RFA must be received by the division engineer within 60 days of the date of the NAP.

(2) *Reasons for appeal.* The reason(s) for requesting an appeal of an approved JD, a permit denial, or a declined permit must be specifically stated in the RFA and must be more than a simple request for appeal because the affected party did not like the approved JD, permit decision, or the permit conditions. Examples of reasons for appeals include, but are not limited to, the following: A procedural error; an incorrect application of law, regulation or officially promulgated policy; omission of material fact; incorrect application of the current regulatory criteria and associated guidance for identifying and delineating wetlands; incorrect application of the Section 404(b)(1) Guidelines (see 40 CFR Part 230); or use of incorrect data. The reasons for appealing a permit denial or a declined permit may include jurisdiction issues, whether or not a previous approved JD was appealed.

(b) *Actions not appealable.* An action or decision is not subject to an administrative appeal under this part if it falls into one or more of the following categories:

(1) An individual permit decision (including a letter of permission or a standard permit with special conditions), where the permit has been accepted and signed by the permittee. By signing the permit, the applicant waives all rights to appeal the terms and conditions of the permit, unless the authorized work has not started in waters of the United States and that issued permit is subsequently modified by the district engineer pursuant to 33 CFR 325.7;

(2) Any site-specific matter that has been the subject of a final decision of the Federal courts;

(3) A final Corps decision that has resulted from additional analysis and evaluation, as directed by a final appeal decision;

(4) A permit denial without prejudice or a declined permit, where the controlling factor cannot be changed by the Corps decision maker (e.g., the requirements of a binding statute, regulation, state Section 401 water quality certification, state coastal zone management disapproval, etc. (See 33 CFR 320.4(j));

(5) A permit denial case where the applicant has subsequently modified the proposed project, because this would constitute an amended application that would require a new public interest review, rather than an appeal of the existing record and decision;

(6) Any request for the appeal of an approved JD, a denied permit, or a declined permit where the RFA has not been received by the division engineer within 60 days of the date of the NAP;

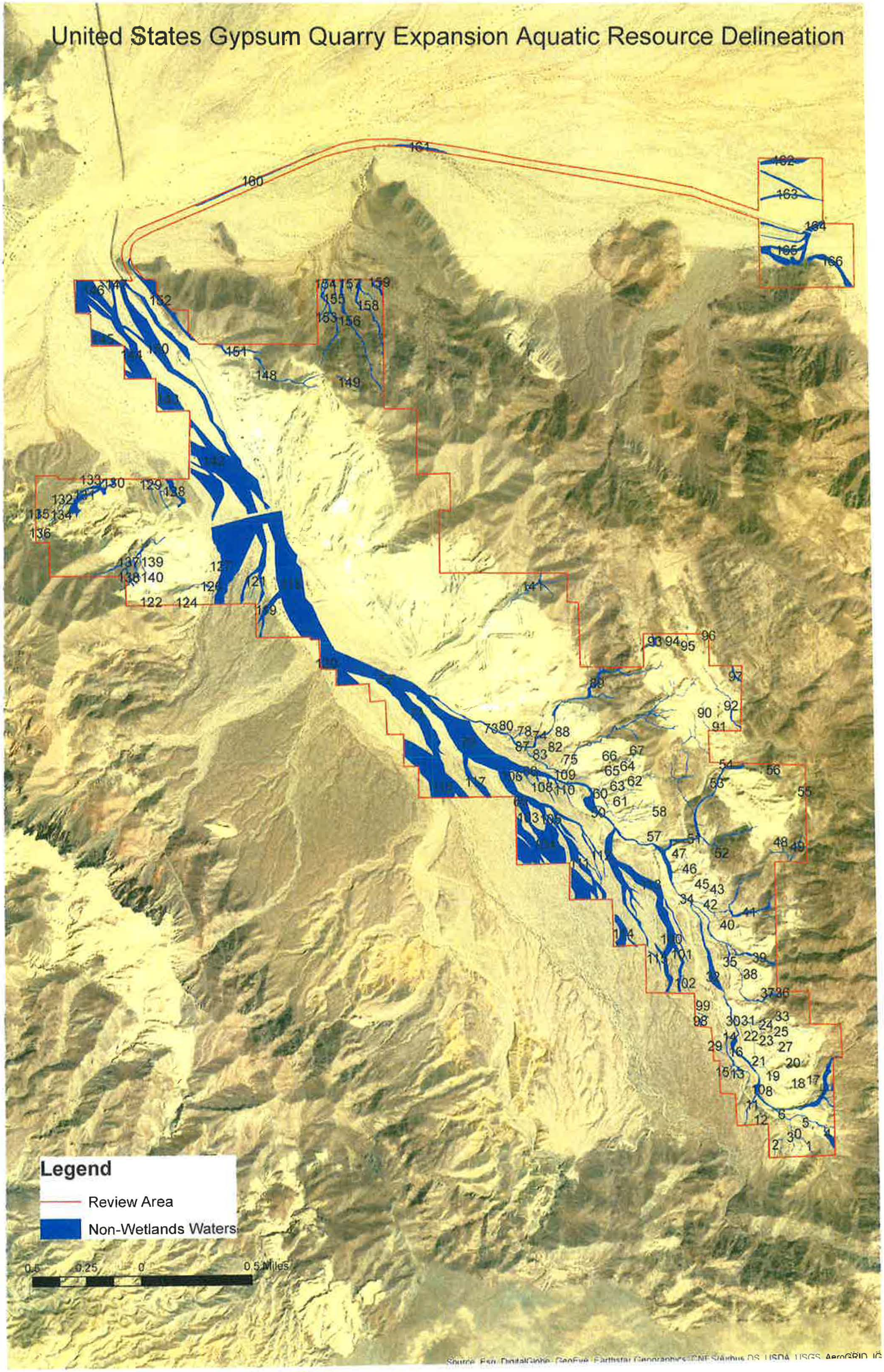
(7) A previously approved JD that has been superceded by another approved JD based on new information or data submitted by the applicant. The new approved JD is an appealable action;

(8) An approved JD associated with an individual permit where the permit has been accepted and signed by the permittee;

(9) A preliminary JD; or

(10) A JD associated with unauthorized activities except as provided in §331.11.

United States Gypsum Quarry Expansion Aquatic Resource Delineation



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IG

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Appendix D-6:
Old Kane Springs Road Jurisdictional Delineation

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DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

MEMORANDUM

To:	John Bowsher, Quarry Manager
From:	Cody Schaaf, Biologist
Subject:	Initial Jurisdictional Aquatic Resources Delineation Findings, Old Kane Springs Road Mitigation Site, San Diego County, California
Date:	April 22, 2022
Attachment(s):	Figures Attachment A, Site Photos Attachment B, Data Forms Attachment C, Plant List Attachment D, Wildlife List

1 Introduction

This memorandum provides the initial findings of a formal jurisdictional aquatic resources delineation of state waters on the proposed Old Kane Springs Road Mitigation (Mitigation) site in eastern San Diego County, California. The delineation defined aquatic resources potentially under the jurisdiction of California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB). No wetlands or waters under the jurisdiction of the US Army Corps of Engineers (USACE) exist on the site. The results of this delineation are preliminary until verified by CDFW and RWQCB.

Attachment A shows photos of representative aquatic features and indicators observed on the site. All data forms collected on the site can be found in Attachment B.

Project Location

The proposed Mitigation site is generally located southwest of the community of Ocotillo Wells, California, south of Highway 78 and west of Split Mountain Road. The approximately 120-acre site spans privately owned desert open space along Old Kane Springs Road in the far eastern portion of San Diego County, California (Figure 1, Project Location). The approximate center of the Mitigation site is 33.122841° N and -116.179786° W (decimal degrees).

2 Regulatory Setting

California Department of Fish and Wildlife

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or other aquatic wildlife.

In Title 14 of the California Code of Regulations, Section 1.72, CDFW defines a "stream" (including creeks and rivers) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation."

In Title 14 of the California Code of Regulations, Section 1.56, CDFW defines "lake" to include "natural lakes or man-made reservoirs." Diversion, obstruction, or change to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife requires authorization from CDFW by entering into an agreement pursuant to Section 1602 of the Fish and Game Code.

California Regional Water Quality Control Board

The State Water Resources Control Board has authority over wetlands through Section 401 of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act, as well as California Code of Regulations Section 3831(k) and California Wetlands Conservation Policy. The CWA was established to create a regulatory permitting program designed to address the discharge of pollutants into "waters of the United States," which includes surface waters and water bodies as defined by U.S. Environmental Protection Agency regulations (e.g., 40 CFR Section 122.2). All "waters of the United States" in California are also "waters of the state" (defined by the Porter-Cologne Water Quality Control Act as "any surface water or ground water, including saline waters, within the boundaries of the state." [Water Code Section 13050(e)]). However, not all waters of the state (e.g., ground water) are waters of the United States.

Clean Water Act – Section 401

The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the State Water Resources Control Board to the nine regional boards. The Central Valley RWQCB (Region 5) has authority for Section 401 compliance in the project area. A request for certification is submitted to the regional board at the same time that an application is filed with the USACE. If a CWA Section 404 permit is not required for the project, the RWQCB may still require a permit (i.e., Waste Discharge Requirement) for impacts to waters of the state under the Porter-Cologne Act (described below).

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act established the State Water Resources Control Board and each RWQCB as the principal state agencies responsible for the protection of water quality in California. The Porter–Cologne Water Quality Control Act provides that "All discharges of waste into the waters of the State are privileges, not rights." Waters of the state are defined in Section 13050(e) of the Porter–Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter–Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The Central Valley RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction.

3 Methods

Desktop Review

Prior to conducting fieldwork, Dudek conducted a review of hydrology, soils and all previously mapped wetland, riverine, and riparian features associated with the Mitigation site. This included extensive desktop review of the survey area, historical land use, local and regional climactic data, and aerial photography (including historical aerials) with topographic configurations and vegetative signatures. These signatures may suggest the potential or presence of potentially jurisdictional waters at the time of the field survey. This information was evaluated by consulting the following available sources:

- 7.5-minute Harper Canyon and Borrego Mountain quadrangle maps (and surrounding quads) (USGS 2018)
- Historical aerials (Google Earth 2021)
- The web-based U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Mapper (USFWS 2021)
- The National Hydrography Dataset (USGS 2021)
- UC Davis/NRCS SoilWeb (UC Davis/NRCS 2021)
- The latest state and federal regulatory definitions, guidance documents, and delineation manuals for state and federally regulated waters (including wetlands)

Field Delineation Methods

Dudek biologists Callie Amoaku, Cody Schaaf, Erin Bergman and Charles Adams conducted the delineation of the Mitigation site in September 2021 (Table 1). Photos (see Attachment A) and various data sheets were collected during the delineation (see Attachment B).

Table 1. Jurisdictional Delineation Schedule

Date	Personnel	Conditions
09/01/2021	Callie Amoaku, Cody Schaaf, Erin Bergman, Charles Adams	79-97°F, 0-60% cloud cover (cc), 0–3 mile-per-hour (mph) winds

The site was evaluated for evidence of fluvial indicators such as drainage swales, mud cracks, drift, wracking, cut banks, and sediment transportation and sorting. The extent of any potential aquatic resources was determined by mapping the areas with fluvial characteristics and topography showing evidence of consistent flow patterns and hydrologic connectivity. To assist in the mapping of non-wetland waters, data was collected using the USACE's *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual* (USACE 2008). Dudek also utilized the *Episodic Stream Indicator Data Sheet* of the California Energy

Commission (CEC) document *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants* (CEC 2014) to document several of the features within the study area. These data sheets can be found in Attachment B.

Since no hydrophytic vegetation and/or associated wetlands were present on the site, streambed and non-wetland waters mapping was the focus of the delineation. These features, hereafter referred to simply as "non-wetland waters," were delineated from bank to bank, using the top of the bank as the boundaries of the channel.

Non-wetland waters were delineated using a Trimble R1 GNSS Receiver with Esri Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the top of bank of each feature. OHWM data forms describing channel attributes across the site are included in Attachment B.

Dudek also mapped vegetation communities and land covers on the site during the delineation. Mapping was in accordance with the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) or the *Draft Vegetation Communities of San Diego County* (Oberbauer et al. 2008). Community classifications were selected based on site factors, descriptions, distribution, and characteristic species present within an area. Visible disturbance factors were also be noted during vegetation mapping.

Dudek extensively documented site attributes, including OHWM indicators and vegetation communities, through photos. Attachment A shows photos of representative aquatic features and indicators observed on the site.

Post-Field Desktop Review and Hydrologic Modeling Methods

Desert landscapes often produce problematic OHWM indicators that can be inconsistent (over space and time) and difficult to delineate in the field (USACE 2008). To analyze and further test the initial results of the field delineation, Dudek conducted a hydrologic modeling exercise to ensure that the fluvial indicators observed in the field matched a simulated flow event across the site.

The methods used in the modeling are described in the San Diego County Hydrology Manual (2003). The National Resources Conservation Service (NRCS) hydrologic method, which is outlined in Section 4 of the Hydrology Manual, was used to develop the rainfall-runoff relationship. Hydraulic Engineering Center Hydrologic Modeling System (HEC-HMS) software developed by the U.S. Army Corps of Engineers (USACE) was used to model the precipitation-runoff process of the watershed's contributing flow to the site. Contributing watersheds were delineated using available topographic information and StreamStats, a web-based Geographic Information System (GIS) application developed by the USGS that provides analytical tools for water-resources planning and design purposes. HEC-HMS was utilized to calculate peak discharges for a 25-year rainfall event with a storm duration of 24-hours. Hydraulic Engineering Center River Analysis System (HEC-RAS) software was used to model the 25-year, 24-hour flood inundation areas, depths, and flow velocities at the site. Two-dimensional unsteady-flow modeling was performed to generate maximum flow areas, depths, and velocities. A flow area computational mesh was generated using a 1-meter Digital Elevation Model terrain map from 2016 downloaded from USGS. This flow area mesh was overlaid with the initial field delineation results to display the full potential extent of jurisdictional non-wetland waters on the site.

4 Results – Initial Findings

Soils

Federal and state soil mapping typically used to obtain data on soils underlaying the site is not available within the boundaries of the Mitigation site (UC Davis/NRCS 2021). Soil series mapped immediately adjacent to the east of the site include Carrizo very gravelly sand, sloping gullied land, riverwash and Rositas loamy coarse sand (UC Davis/NRCS 2021). Carrizo very gravelly sand, riverwash and sloping gullied land are ranked as hydric soils by the Natural Resources Conservation Service (NRCS 2021).

Vegetation

Vegetation mapping performed by Dudek during the delineation indicated that two desert vegetation communities occur on the site: desert dry wash woodland and Sonoran mixed woody scrub. These communities are briefly described below. Their acreages on the site are presented in Table 2 below; Figure 2 displays these communities as they occur on the site.

Table 2. Vegetation Communities

Vegetation Communities	Acreage
Desert Dry Wash Woodland	69.08
Sonoran Mixed Woody Scrub	50.55
Total	**119.63**

Desert Dry Wash Woodland is described by Obebauer et al. (2008) as an open to dense, drought-deciduous riparian scrub woodland 30-60 feet tall that is typically dominated by ironwood (*Olneya tesota*), desert willow (*Chilopsis linearis*) or blue palo verde (*Parkinsonia florida*). It occurs in sandy, gravelly washes and arroyos of the lower Mojave and Colorado deserts. These washes typically have braided channels that are substantially rearranged with every surface flow event. On site, this community is dominated by ironwood and occupies the main alluvial fan/wash in the center of the site. Scattered creosote bush (*Larrea tridentata*) shrubs occur within this community, along with white bursage (*Ambrosia dumosa*).

Sonoran Mixed Woody Scrub is described by Obebauer et al. (2008) as a Colorado desert community with mixed woody species occurring on well-drained slopes and alluvial fans, usually at the base of mountains. The three most characteristic species of this community also dominate this vegetation community on site: creosote bush, white bursage and ocotillo (*Foquieria splendens*). This community occurs outside of the well-defined alluvial fans/drainages on the site.

Comprehensive lists of the plant and wildlife species observed on the site within these habitats during the vegetation mapping and jurisdictional delineation are included in Attachments C and D.

Hydrology

Three watersheds totaling 20.4 square miles were determined to contribute flow to the site. Figure 3, Watershed Map, displays the watersheds directly contributing flow to the site which were utilized in the hydrologic modeling exercise. The USFWS NWI Mapper (USFWS 2021) shows a series of 4 small riverine features flowing east to west through a well-defined alluvial fan in the central portion of the site; this was confirmed during the site visit, where many low flow channels were observed moving through the main wash in the center of the site. Additional minor channels were braided through additional floodplain and limited upland areas outside of the main wash.

According to USFWS NWI mapping (USFWS 2021), riverine features on the site continue off site to the east and flow through the alluvial fan until it widens and becomes undefined near Split Mountain Road, approximately 4 miles east of the site; at this point, the features are no longer mapped. Hydrologic connectivity to downstream washes or known creeks and rivers is unclear, but it is likely that sheet flows or groundwater from these features that cross the site eventually drain into San Felipe Creek and later the Salton Sea, east of the site.

4.1 Non-Wetland Waters

Overall, the site landscape drains water in an easterly direction, mainly through a large alluvial fan/wash consisting of numerous braided low-flow channels and swales within the desert dry wash woodland and Sonoran mixed woody scrub vegetation communities; one large non-wetland water was mapped to include all active low-flow channels within their larger floodplain area that exhibits low topographic variability between active flow channels and floodplain terraces. The central floodplain/wash on the site was very well defined with cut banks and strong fluvial indicators within and between low-flow channels. The northern and southern floodplains were a mosaic of floodplain terraces containing numerous unvegetated low-flow channels within a floodplain of low topographic variability with minor and often inconsistent fluvial indicators.

Additionally, a few smaller non-wetland waters flowing through the upland Sonoran mixed woody scrub outside of larger floodplains were mapped adjacent to or connecting to the wash; these features had well-defined banks (albeit smaller and less pronounced than those associated with the larger wash) and stood out from the surrounding upland vegetation community. All aquatic features in the study area deemed to be potentially jurisdictional, confirmed through both the field delineation and associated hydrologic modeling, are displayed in Figure 4, Aquatic Resources Map.

In general, nearly all the field-mapped non-wetland water and low-flow channel boundaries (mapped based on evidence of flow and hydrology indicators, such as bed and bank, drift deposits, sediment sorting, and/or mud cracks) fell within the maximum flow areas generated through the hydrologic model. The northern and southernmost portions of the site, outside of the central wash, showed more inconsistent and less-pronounced fluvial and OHWM indicators in the field; hydrologic modeling was used to refine the extent of non-wetland water boundaries within the Mitigation site. Figure 4 displays the boundaries of hydrologically modeled and field-verified non-wetland waters on the site and likely corresponds to accurate surface flow areas across the site during a significant runoff event.

Non-wetland waters on the site are ephemeral, meaning they only flow during storm events. These features are likely regulated by RWQCB and CDFW as waters of the state.

4.2 Swales

Several potential swale features without well-defined banks may present on site; these include areas of occasional surface sheet flow with slight topographic depressions and occasional, but often inconsistent, fluvial indicators that may or may not be subject to regulation by any of the agencies. These features were not mapped under the scope of this delineation but typically fell within the main floodplains of the mapped extent of non-wetland waters (Figure 3). Representative photos of these potential swale features within the larger floodplains are provided in Attachment A.

4.3 Potential Jurisdictional Aquatic Resources Summary

Table 3 below summarizes the results of the jurisdictional delineation and the areas of potential jurisdictional aquatic resources observed and mapped on the Project site.

Table 3. Potential Jurisdictional Aquatic Resources

Type	Jurisdiction	Acres/Linear Feet
Non-Wetland Waters of the State (Within Alluvial Fan/Wash)	CDFW and RWQCB	88.5/13,950
Total Potential Jurisdictional Aquatic Resources		**88.5/13,950**

5 Summary

The site supports 88.5 acres (13,950 linear feet) of non-wetland waters of the state in the form of an expansive desert wash and several isolated channels braided through the surrounding upland habitats. These non-wetland waters likely fall under the jurisdiction of CDFW and RWQCB given the well-defined fluvial indicators they display. The results of this delineation are preliminary until verified by CDFW and RWQCB.

6 References

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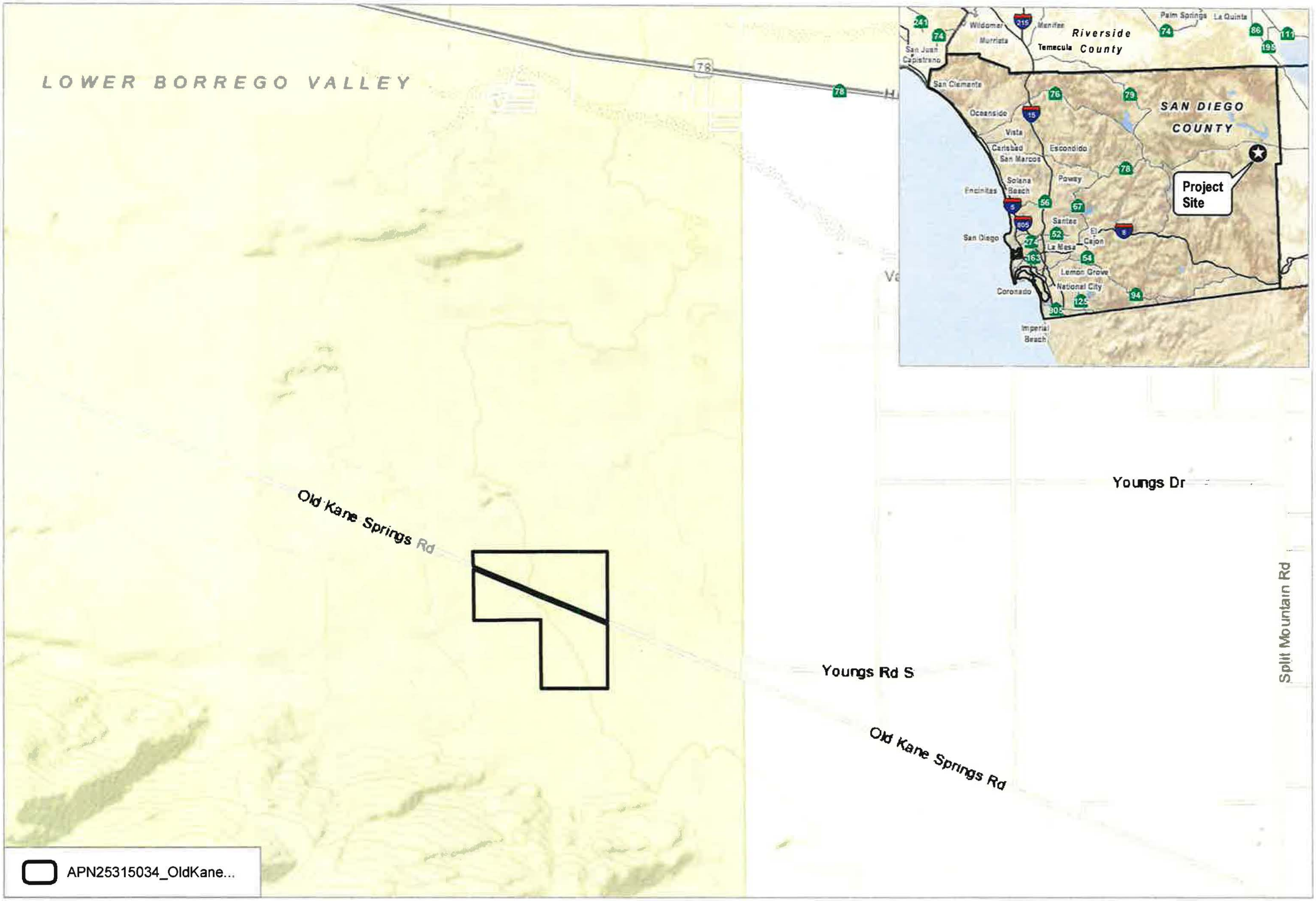


SOURCE: USGS 7.5-Minute Series Harper Canyon Quadrangle

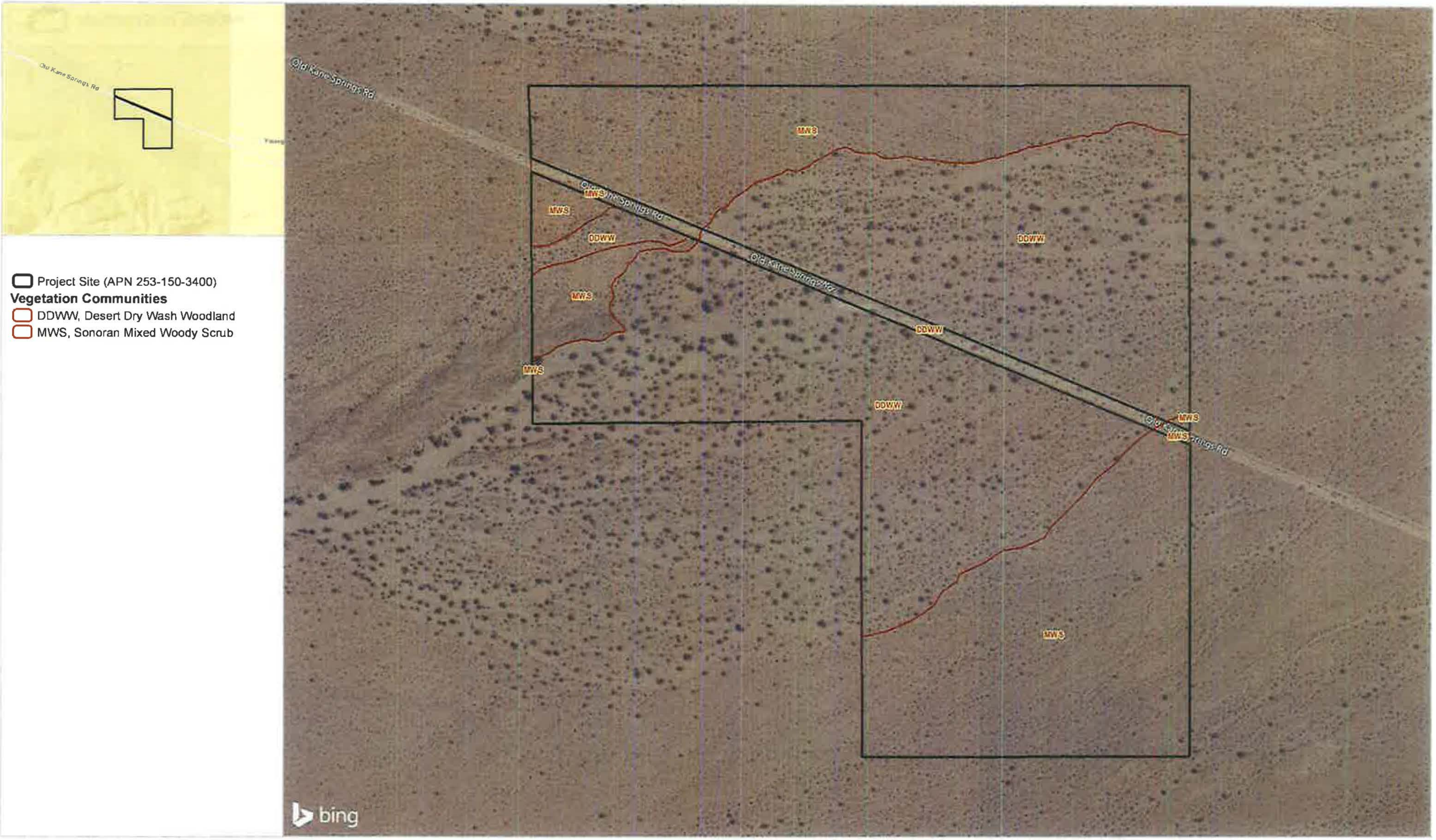
DUDEK

0 1,250 2,500 Feet

FIGURE 1

Project Location

Initial Jurisdictional Aquatic Resources Delineation Findings for Old Kane Springs Road Mitigation Site



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DUDEK

FIGURE 2

Vegetation Map

[illegible]

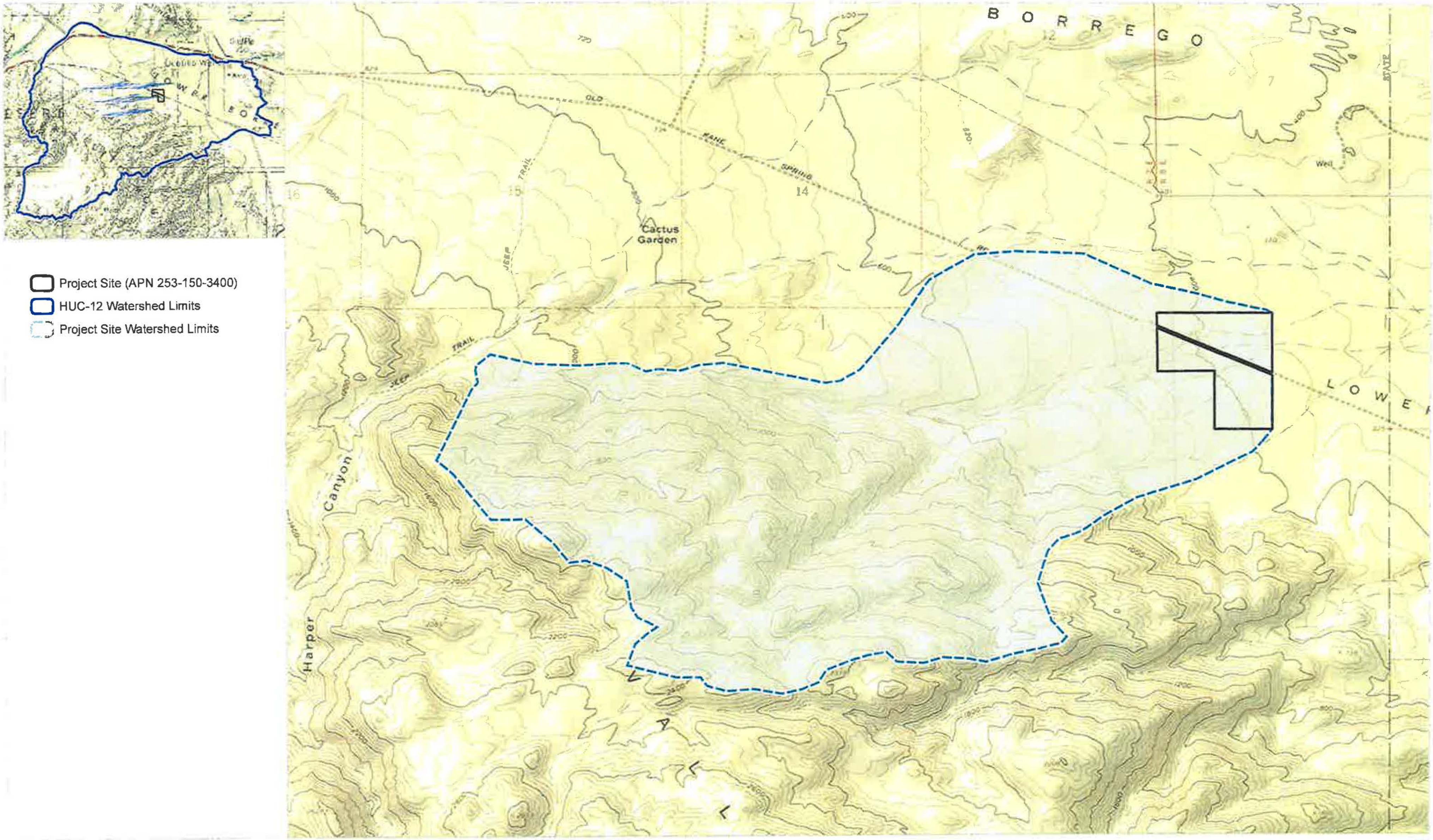


FIGURE 3

Watershed Map

DUDEK

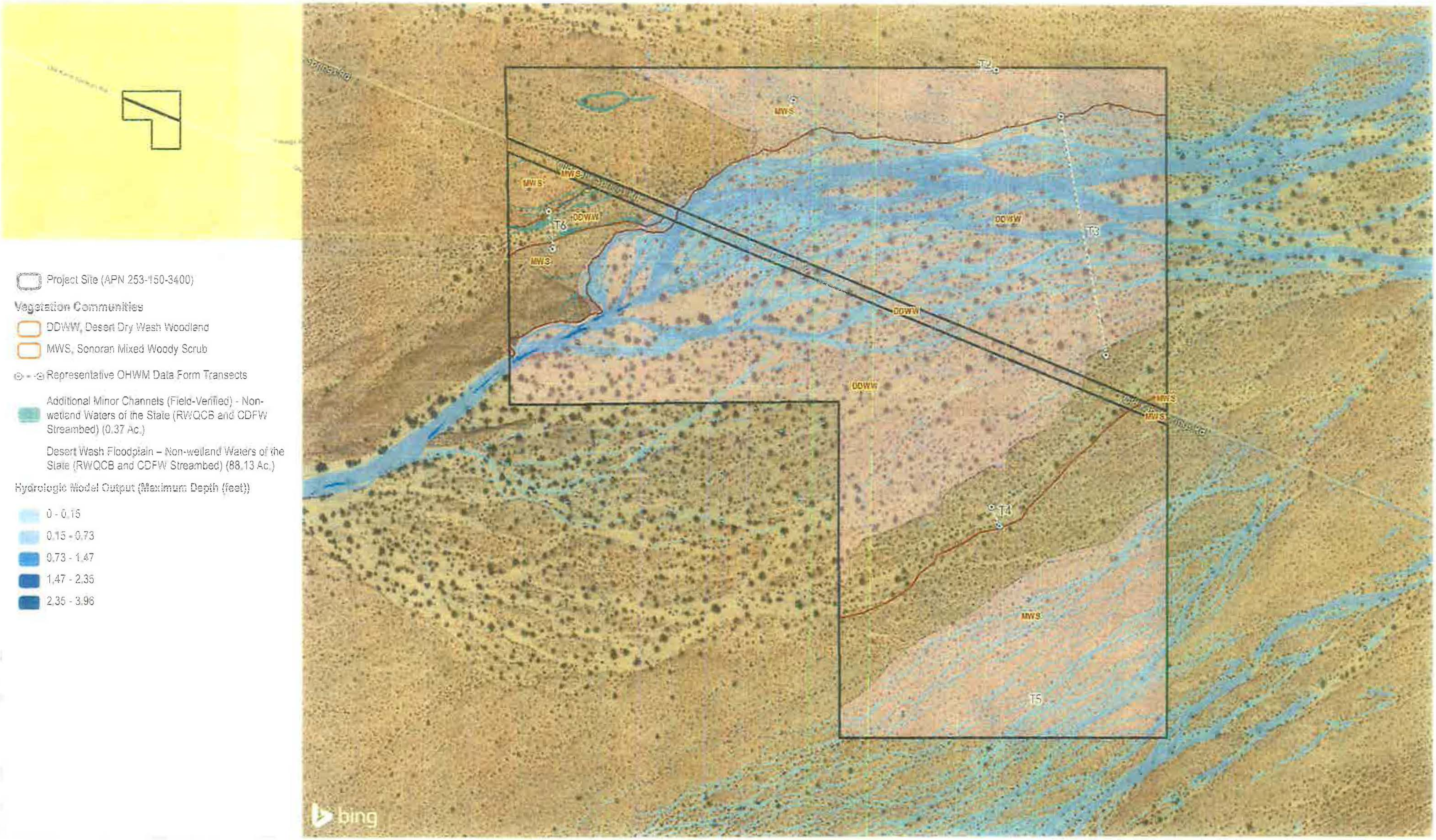


FIGURE 4

Aquatic Resources Map

Attachment A

Site Photos

Photo 1: Representative photo showing minor low-flow channels braided throughout desert vegetation the northern portion of the site. This area is considered a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

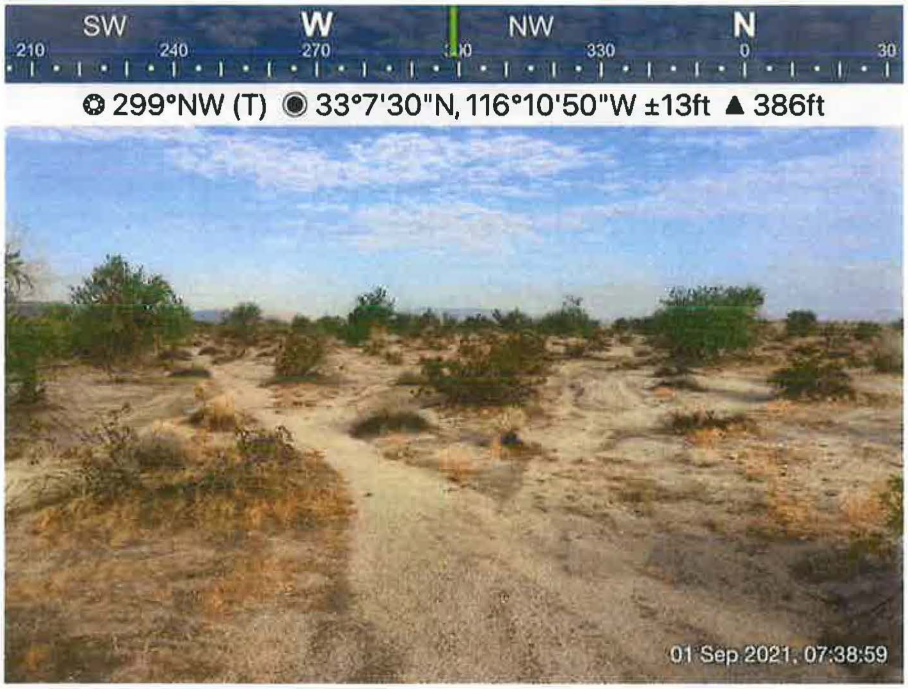


Photo 2: Additional minor channels braided throughout the northern portion of the site. This area is considered a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

Photo 3: The northern edge of the central wash is shown here with clear cut banks. Minor channels from the northern floodplain are shown in the right side of the photo entering the central wash.

Photo 4: The southern boundary of the central wash is less well defined, but clear differences in the cover of creosote bush can be seen; to photo right and outside of the wash, much higher cover of creosote bush and cacti is observed.

Photo 5: The middle of the central wash is dominated by ironwood trees and contains many braided low flow channels with strong fluvial indicators. Ripples and flow patterns in the sand can be seen in this photo as well as exposed rocks at low flow channel edges.

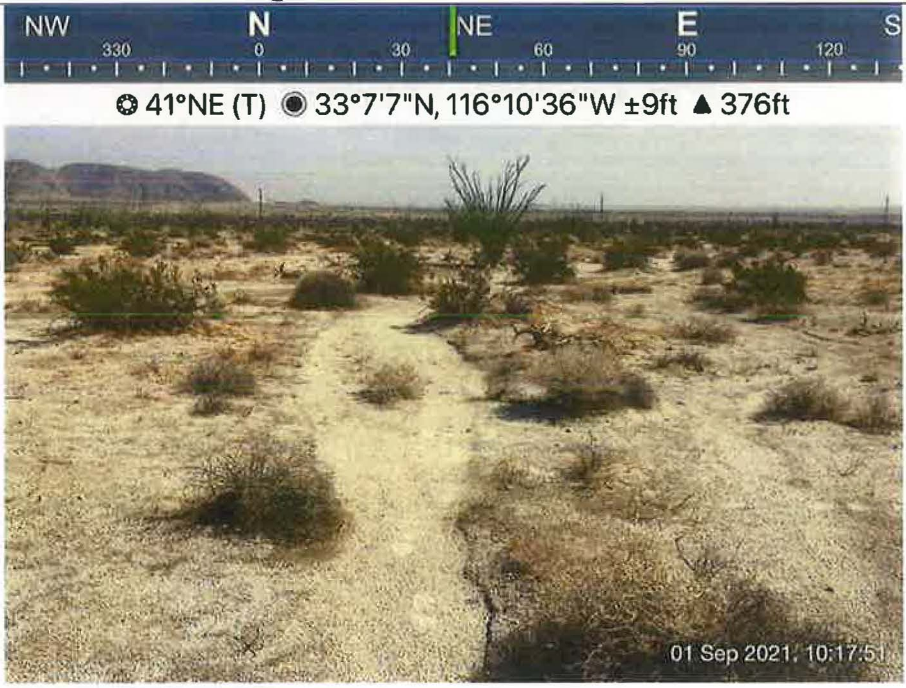


Photo 6: Minor channels with small cut banks and other fluvial indicators are present in certain areas of the southern portion of the site. Channels are braided together and considered to be a desert wash floodplain/non-wetland water given the numerous channels present and low topographic variability.

Photo 7: Looking across Transect 1 (T1) where an OHWM form was taken across a potential swale/weakly defined low-flow channel feature within the larger desert wash floodplain in the northern portion of the site.

Photo 8: Looking across Transect 2 (T2) where an OHWM form was taken across a low-flow channel feature with small but defined banks within the larger desert wash floodplain in the northern portion of the site.

Photo 9: Looking across Transect 3 (T3) where an OHWM form was taken within the main desert wash/floodplain feature with many low-flow channels showing evidence of ripple marks in the sand, small cut banks and a much higher density of ironwood trees. The entire wash, including its many adjacent low-flow channels are considered one large non-wetland water.

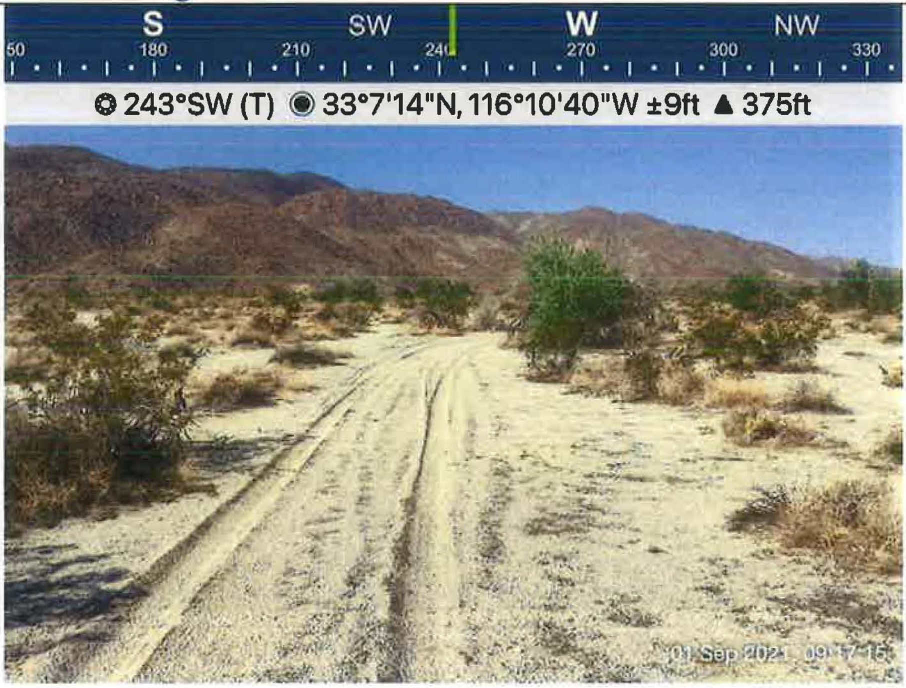


Photo 10: Looking across Transect 4 (T4) where an OHWM form was taken across an unvegetated upland area showing no evidence of banks/indicators of flow despite the appearance of a drainage on aerial imagery.

Photo 11: Looking across Transect 5 (T5) where an OHWM form was taken across a low-flow channel feature with small but defined banks within the broader desert wash floodplain in the southern portion of the site.

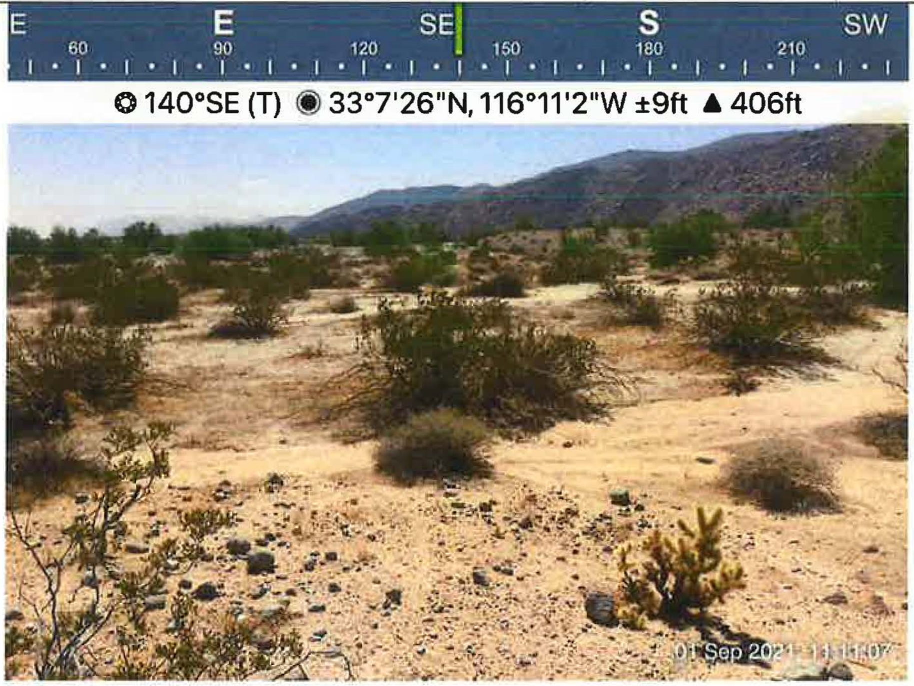


Photo 12: Looking across Transect 6 (T6) where an *Episodic Stream Indicator Data Sheet* was taken across an desert area with several small, isolated non-wetland water features braided throughout the landscape.

Attachment B

Data Forms

T1

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd Mitigation Site	**Date:** 9/1/21	**Time:** n/a
Project Number: 13581.04	**Town:** Ocotillo Wells	**State:** CA
Stream: None - Potential Swale	**Photo begin file#:**	**Photo end file#:**
Investigator(s): Cody Schaaf, Callie Amoaku		

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Open space / desert off Old Kane Springs Rd.

Projection: **Datum:** WGS84

Coordinates: 33.125156, -116.180746

Potential anthropogenic influences on the channel system:
OHV, Shooting, and Recreation.

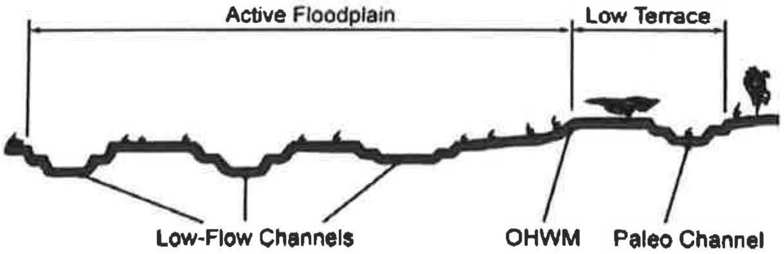
Brief site description: Upland desert habitat adjacent to large alluvial fan. Some potential swales throughout

Checklist of resources (if available):

☒ Aerial photography
Dates: 2021
☒ Topographic maps
☒ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☒ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



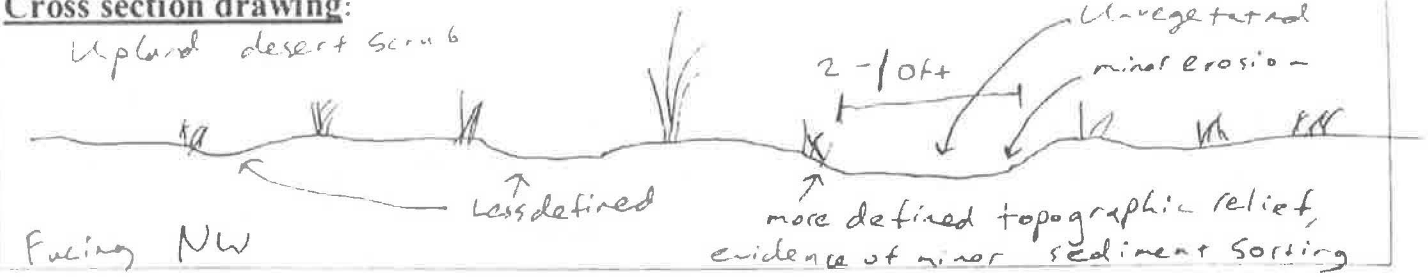
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☐ Digitized on computer
☒ GPS
☐ Other:

Project ID: 13581.04 **Cross section ID:** T1 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: T1

Indicators:

☒ Change in average sediment texture – minor change to lighter, finer grained sand
☐ Change in vegetation species
☒ Change in vegetation cover
↳ Many upland areas also unvegetated.
☐ Break in bank slope
☐ Other:
☐ Other:

Comments: minor change in sediment texture and less vegetated than adjacent areas with shrubs, Not strong indicators, potential swale.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

Potential braided swale

GPS point:

Characteristics of the floodplain unit:

Average sediment texture: Course sand to fine sand

Total veg cover: 35 % Tree: 5 % Shrub: 20 % Herb: 10 %

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☒ Mid (herbaceous, shrubs, saplings)
☒ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other:
☐ Other:
☐ Other:

Comments: Potential swale - very inconsistent and many less defined "braids" with similar features exist across the upland portions of the site

T2

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd mitigation
Date: 9/1/21
Time: n/a
Project Number: 13581 04
Town: Ocotillo Well,
State: CA
Stream: Alluvial fan
Photo begin file#:
Photo end file#:
Investigator(s): Cody Schaaf, Callie Amoaku

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details: Desert alluvial fan

Projection:
Datum: WGS84
Coordinates: 33 125499, -116.178130

Potential anthropogenic influences on the channel system:

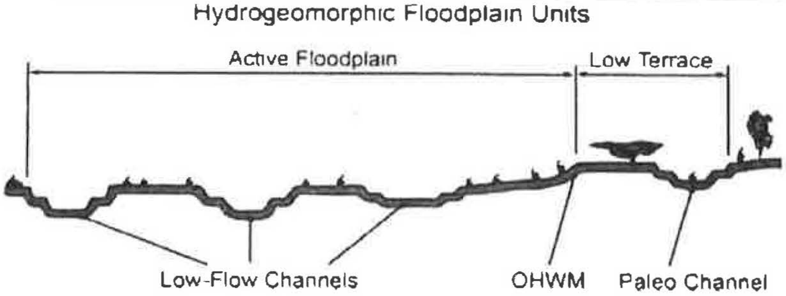
See T1

Brief site description: Minor channel in upland adjacent to wosL

Checklist of resources (if available):

☑ Aerial photography
Dates: 2021
☑ Topographic maps
☑ Geologic maps
☑ Vegetation maps
☑ Soils maps
☑ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☑ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event



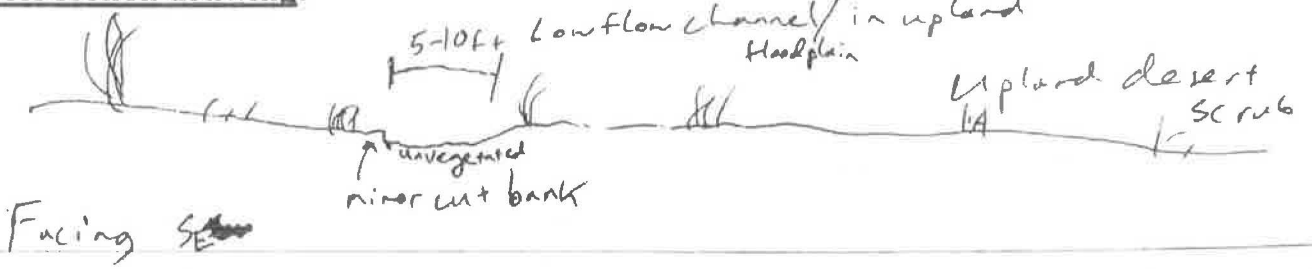
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☑ GPS
☐ Digitized on computer
☐ Other:

Project ID: 13581.04 **Cross section ID:** T2 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: T2

Indicators:

- ☒ Change in average sediment texture
- ☐ Change in vegetation species
- ☒ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: ____________
- ☐ Other: ____________

Comments: Finer, lighter sand in small channel, unvegetated, and small cut banks showing erosion

Floodplain unit: ☒ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

→ minor channel comprised of both Lowflow channel and floodplain

GPS point: ____________

Characteristics of the floodplain unit:

Average sediment texture: Coarse - Fine sand

Total veg cover: 01 % Tree: ___ % Shrub: ___ % Herb: 1 % (in channel)

Community successional stage:

- ☐ NA
- ☒ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

Indicators:

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☒ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☒ Surface relief
- ☐ Other: ____________
- ☐ Other: ____________
- ☐ Other: ____________

Comments: minor banks and clear surface/ topographic relief.

T3

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd
Project Number: 13581.04
Stream: Alluvial Fan/Wash
Investigator(s): Cody Schaaf, Callie Amoaku

Date: 9/1/21
Town: Ocotillo Wells
Photo begin file#:

Time:
State: CA
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: In desert wash/alluvial fan.

Projection:
Datum: WGS 84
Coordinates: 33.123663, -116.176950

Potential anthropogenic influences on the channel system:

See T 1

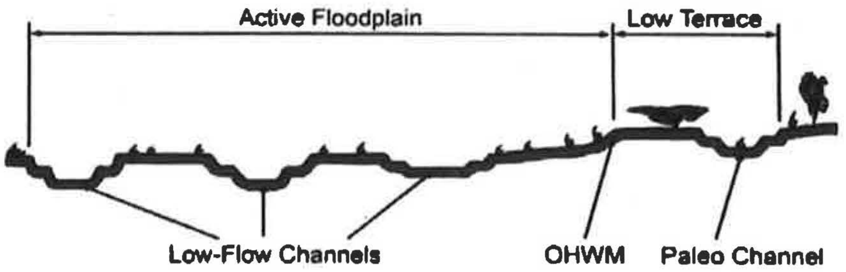
Brief site description: Transect taken across large, wide desert wash with Ironwood (Olneya sp.) dominating vegetation layer. many low flow channels within wash boundaries. Wash mapped bank to bank and according to presence of Ironwood.

Checklist of resources (if available):

☒ Aerial photography
Dates: 2021
☒ Topographic maps
☒ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☒ Global positioning system (GPS)
☒ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



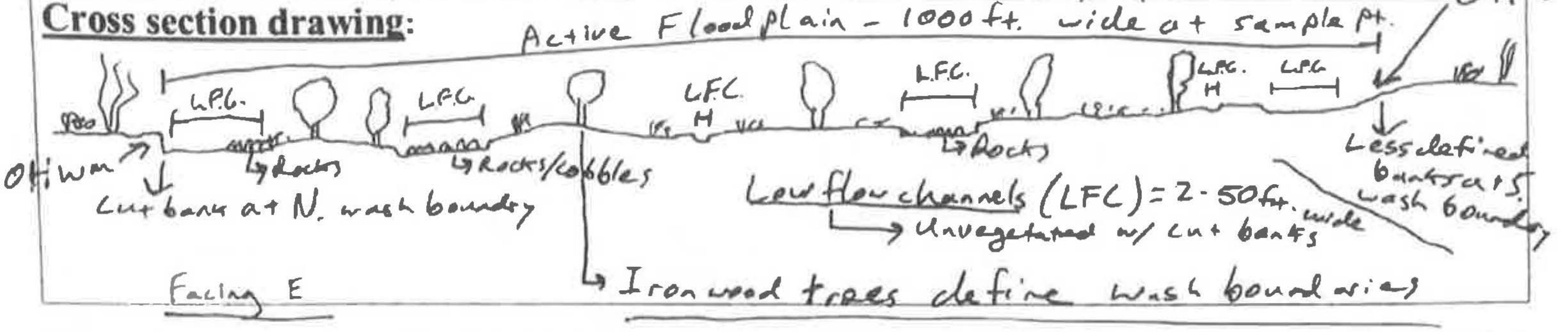
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☐ Digitized on computer
☒ GPS
☐ Other:

Project ID: 13581 ay **Cross section ID:** T3 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: see wash boundaries on map

Indicators:

☒ Change in average sediment texture
☒ Change in vegetation species
☐ Change in vegetation cover
☒ Break in bank slope
☐ Other: ____________
☐ Other: ____________

Comments: In wash, veg cover becomes dominated by Ironwood trees. Break in bank slope on N. side of wash well defined. Rocks and cobbles become much more common in and around low flow channels. Ironwoods on terraces within floodplain.

Floodplain unit: ☒ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: Not mapped

Characteristics of the floodplain unit:

Average sediment texture: Very coarse sand w/ some cobbles
Total veg cover: [illegible]0 % Tree: ____ % Shrub: ____ % Herb: [illegible] %
Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☒ Ripples
☐ Drift and/or debris
☒ Presence of bed and bank
☐ Benches
☐ Soil development
☒ Surface relief
☒ Other: Cobbles exposed
☐ Other: ____________
☐ Other: ____________

Comments: Ripples, defined banks, areas of exposed cobbles and clear surface/topographic relief present in low flow channels.

Project ID: 13581.04 **Cross section ID:** T3 **Date:** 9/1/21 **Time:**

Floodplain unit: ☐ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: T3

Characteristics of the floodplain unit:

Average sediment texture: Very coarse Sand

Total veg cover: ~~[illegible]~~ 38 % Tree: ~~[illegible]~~ 10 % Shrub: ~~[illegible]~~ 15 % Herb: ~~[illegible]~~ 5 %

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☒ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☒ Ripples
☐ Drift and/or debris
☒ Presence of bed and bank
☒ Benches
☐ Soil development
☒ Surface relief
☒ Other: Presence of Ironwood
☐ Other:
☐ Other:

Comments: Ripples, benches, banks, and ironwoods present and defining the wash floodplain.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: ____

Characteristics of the floodplain unit:

Average sediment texture: ____

Total veg cover: ____ % Tree: ____ % Shrub: ____ % Herb: ____ %

Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: ____
☐ Other: ____
☐ Other: ____

Comments:

T4

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Old Kane Springs Rd Mitigation **Date:** 9/1/21 **Time:** n/a
Project Number: 13581.04 **Town:** Ocotillo Wells **State:** CA
Stream: None **Photo begin file#:** **Photo end file#:**
Investigator(s): Cody Schaaf, Callie Amoaku

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: Upland desert scrub adjacent to alluvial fan

Projection: **Datum:**
Coordinates: 33.120603, -116.178149

Potential anthropogenic influences on the channel system:

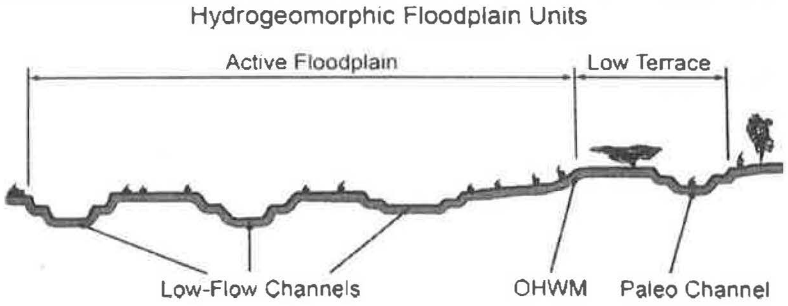
See T1. Road may exist through this transect

Brief site description: Bare ground adjacent to desert wash in upland scrub. Looks like part of wash on aerial imagery

Checklist of resources (if available):

☒ Aerial photography
Dates: 2021
☒ Topographic maps
☒ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☒ Global positioning system (GPS)
☐ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event



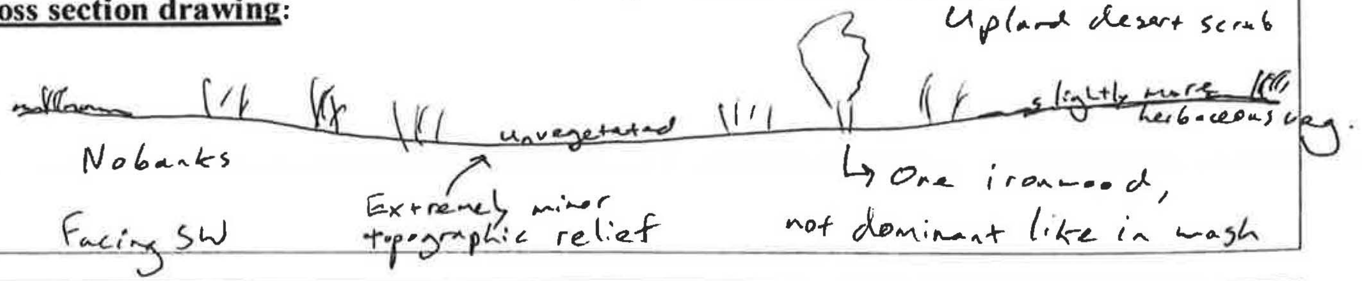
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph ☒ GPS
☐ Digitized on computer ☐ Other:

Project ID: 1358.04 **Cross section ID:** T4 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: None

Indicators: → Sediment same as in upland here

☐ Change in average sediment texture
☐ Change in vegetation species
☒ Change in vegetation cover – Not an OHWM
☐ Break in bank slope
☐ Other: ______
☐ Other: ______

Comments: Slightly connects to wash on aerial but this area only shows less vegetation cover on ground between shrubs. No clear sign of true fluvial indicators (i.e. banks). Only one or two ironwoods - not significant as adjacent wash.

Floodplain unit: ☐ Low-Flow Channel ☐ Active Floodplain ☐ Low Terrace

GPS point: None

Characteristics of the floodplain unit:
Average sediment texture: ______
Total veg cover: ____% Tree: ____% Shrub: ____% Herb: ____%
Community successional stage:
☐ NA
☐ Early (herbaceous & seedlings)
☐ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:
☐ Mudcracks
☐ Ripples
☐ Drift and/or debris
☐ Presence of bed and bank
☐ Benches
☐ Soil development
☐ Surface relief
☐ Other: ______
☐ Other: ______
☐ Other: ______

Comments:

None. If anything, this is an overflow channel for wash that only sees flows in extreme rain events (ie. 100+ year flooding).

T5

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: ~~[illegible]~~ Old Kane Springs Rd
Project Number: 13581.04
Stream: Alluvial fan
Investigator(s): Cody Schaaf, Callie Amoaku

Date: 8/1/21
Town: Ocotillo Wells,
Photo begin file#:

Time: n/a
State: CA
Photo end file#:

Y ☒ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☒ Is the site significantly disturbed?

Location Details: SE portion of site in upland desert scrub

Projection:
Datum:
Coordinates: 33.118566, -116.177727

Potential anthropogenic influences on the channel system:

See T1

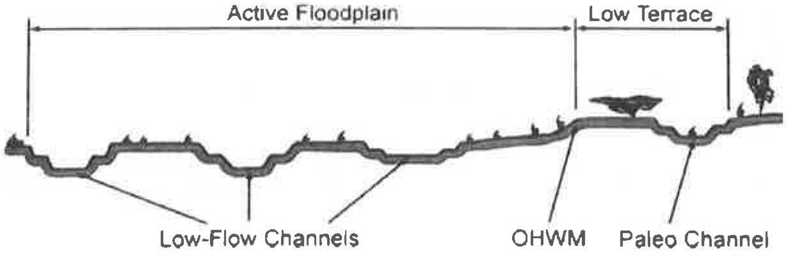
Brief site description: Small channel in upland desert scrub on SE portion of site. Similar to T2.

Checklist of resources (if available):

☒ Aerial photography
Dates: 2021
☒ Topographic maps
☒ Geologic maps
☒ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☒ Global positioning system (GPS)
☒ Other studies

☐ Stream gage data
Gage number:
Period of record:
☐ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units



Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

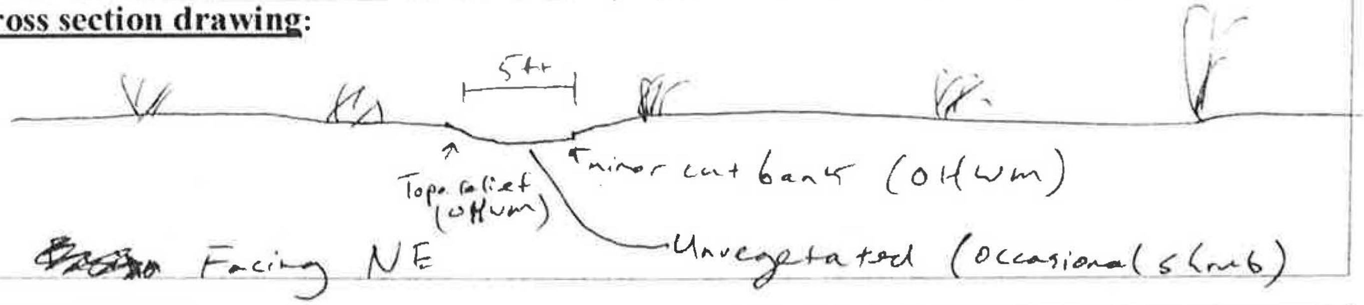
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

☐ Mapping on aerial photograph
☐ Digitized on computer

☒ GPS
☐ Other:

Project ID: 13581.04 **Cross section ID:** T5 **Date:** 9/1/21 **Time:**

Cross section drawing:



OHWM

GPS point: T5

Indicators:

☒ Change in average sediment texture
☐ Change in vegetation species
☒ Change in vegetation cover
☒ Break in bank slope
☐ Other: ________
☐ Other: ________

Comments: Minor but defined and consistent bank erosion, unvegetated channel bottom and finer sand.

Floodplain unit: ☒ Low-Flow Channel ☒ Active Floodplain ☐ Low Terrace

GPS point: see Map

Characteristics of the floodplain unit:
Average sediment texture: Fine to Coarse sand
Total veg cover: 5 % Tree: ___ % Shrub: 5 % Herb: ___ %
Community successional stage:

☐ NA
☐ Early (herbaceous & seedlings)
☒ Mid (herbaceous, shrubs, saplings)
☐ Late (herbaceous, shrubs, mature trees)

Indicators:

☐ Mudcracks
☐ Ripples
(No) ■ Drift and/or debris
☒ Presence of bed and bank
☐ Benches
☐ Soil development
☒ Surface relief
☐ Other: ________
☐ Other: ________
☐ Other: ________

Comments: minor banks, topographic relief, and drainage patterns. Similar to T2 on NW end of site.

Episodic Stream Indicator Data Sheet

page 1 of 4

Site ID: Old Kane Rd [redacted] Mitigation Stream ID: T6 - Upland Date: 9/1/21

Nearest Town: County:

Investigators: Cody Schaaf, Callie Amoaku

Base Map

Aerial Photo #: Date: Topographic Map Name: Borrego mtn / Harper Cyn Date: 2018

GPS Data

GPS Name: Datum: WGS84 Transect Elevation: 300 ft Zone 10 / 11 GPS Error: ± 7 ft / m

GPS co-ords start of transect: 33.12378 -116.18341 GPS co-ords end of transect: 33.12348 -116.18383

Geomorphic Province (✓one) ☐ Mojave ☑ Sonoran/Colorado ☐ Great Basin Other:

Landform (✓ all that apply)

☐ Headwater ☐ Upper fan ☐ Middle fan ☐ Lower fan ☑ Alluvial plain ☐ Axial valley ☐ Playa

Channel Form (✓ one)

☐ Single thread ☑ Braided ☐ Compound ☐ Distributary ☐ Discontinuous Other:

Transect was selected to:

☑ Document fluvial activity & boundaries ☐ Document channel elevations & boundaries

☑ Document habitat associations ☐ Document a change in watercourse morphology

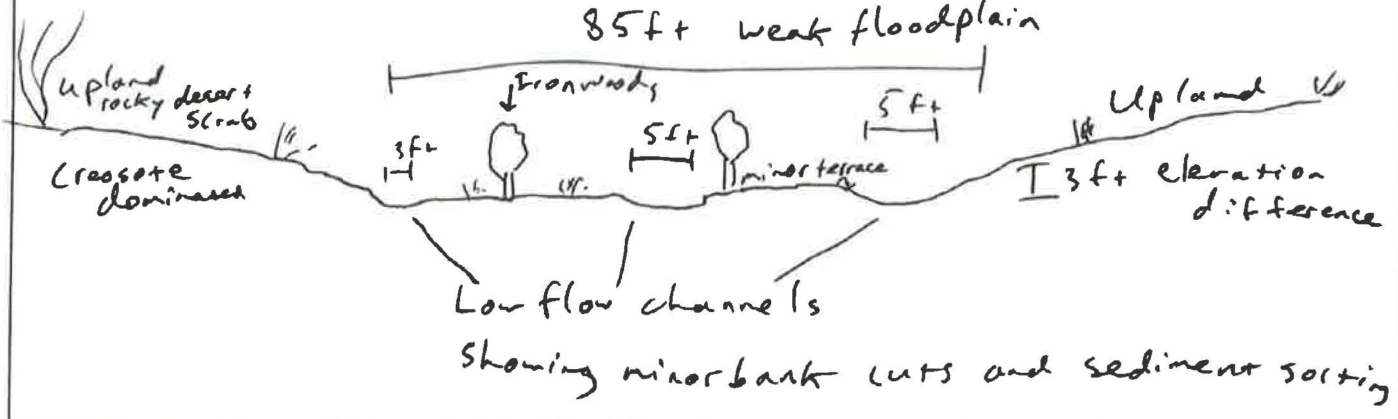
☐ Other:

Date of most recent runoff event (if known): Yesterday, 8/31/21

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function: Allluvial area in desert scrub SW of Ocotillo Wells. Mountain valleys drain flows into gently sloping flats, creating many alluvial fans and washes. Uplands have minor topo. relief that appear to be relict (Not fluvially active) when compared to alluvial floodplains, low flow channels and active swales.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

N
Left ______ Right
S



Site ID: Old Kane Springs Rd.	Stream ID: T6	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

	Terrestrial Indicators				**Substrate Particle Size**	
	Av soil horizon	✓	Relict bars & swales		Estimated percentages	
	Biotic soil crusts		Rock fractured in place		% Bedrock / Cemented substrate	
	Bioturbation		Rock varnish		% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble	✓	Rock weathering	5	[✓ % Cobble]	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	20	[✓ % Pebble]	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	50	[✓ % Granule]	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	25	[✓ % Sand]	≤ 2 mm
	Pavement	✓	Woody debris in place		% Silt/Clay	Fines
	Other:					

Creosote bush scrab with some very minor relict bars / swales but general surface rounding, woody debris in place, and Rock exposure suggesting weathering.
No active fluvial indicators present in uplands.

Fluvial Indicators ← None

	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
~~✓~~	~~Cut banks (minor)~~		Organic drift	~~✓~~	~~Vegetation channel alignment~~
	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
~~✓~~	~~Flow lineations~~	~~✓~~	~~Sediment sorting~~		
	Other:				

~~minor cut banks and sediment sorting. Veg / channel alignment is strongest Indicator – low flow channels unvegetated and floodplain dominated by ironwood.~~

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined): 25%	Dominant and co-dominant species (if known) and % of total vegetative cover of each: Creosote – 10% Ocotillo – 5%	Representative height and width of dominant and co-dominant species: Creosote – 4ft tall, 6 wide Ocotillo – 10ft tall, 4 wide

Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences): ~~5-10% more Creosote in upland and floodplain terraces compared to low flow channel. 3-5% more Ironwood in floodplain compared to upland~~

N/A N/A

Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):
N/A – No fluvially active units ~~Yes Ocotillo only in upland~~. N/A

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences)
N/A – No fluvially active units ~~Yes Ocotillo and Creosote more upland~~ N/A

Site ID: Old Kane Springs Rd.	Stream ID: #6	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
✓	Drainage swales		Sediment ramps: sand / gravel
✓	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel	✓	Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
	% Boulder	≥ 256 mm
	% Cobble	≥ 64 – 256 mm
10	% Pebble	≥ 4 – 64 mm
40	% Granule	≥ 2 – 4 mm
50	% Sand	≤ 2 mm
	% Silt/Clay	Fines

Low flow channels are swale-like. Channel aligned w/ unvegetated areas. Floodplain shows minor sediment sorting in the form of transport of finer sands.

Erosion Indicators

✓	Cut banks (small)		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

Small cut banks are main erosion indicator for low flow channels and boundaries of floodplain.

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
15% in floodplain	Creosote - 5% Ironwood - 5%	Creosote - 4ft tall, 6 wide Ironwood: 15ft tall, 12 wio

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences): No veg. in low flow channels

Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):

See above

Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences)

See above

Site ID Old Kane Spring Rd.	Stream ID T6	page 4 of 4

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

☐	Algal crusts	✓	Sand-filled channels	☐	
☐	Beach ridges	☐	Springs	☐	
☐	Coppice dunes: active / relict	✓	Substrate staining	☐	
☐	Crusts: carbonate / salt / soda	☐	Vegetation-landscape alignments	☐	
☐	Mud: cracks / curls / polygons	☐		☐	
✓	Other: Soil darker in low flow channels – recently moist due to monsoon				

Additional Diagrams and Notes

Vegetation cross-section diagram: Draw a cross-section that identifies the approximate locations along the transect or diagram of geomorphic units (see page 1 of data sheet) where there are changes in vegetation characteristics, as summarized in the vegetation subsections under "Upland" and "Watercourse Complex".

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

Attachment C

Plant List

Plant Species

EUDICOTS

ASTERACEAE—SUNFLOWER FAMILY

Ambrosia dumosa—white bursage

Ambrosia salsola var. *salsola*—burrobrush

Encelia farinosa—brittle bush

Pectis papposa var. *papposa*—manybristle chinchweed

Stephanomeria pauciflora—brownplume wirelettuce

BORAGINACEAE—BORAGE FAMILY

Cryptantha sp. —Unknown Cryptantha species

BRASSICACEAE—MUSTARD FAMILY

Sysimbrium sp. —Unknown mustard species

CACTACEAE—CACTUS FAMILY

Cylindropuntia echinocarpa—Wiggins' cholla

Cylindropuntia ganderi—Gander's buckhorn cholla

Ferocactus cylindraceus—California barrel cactus

Opuntia basilaris—beavertail pricklypear

EUPHORBIACEAE—SPURGE FAMILY

Ditaxis lanceolata—narrowleaf silverbush

Euphorbia micromera—Sonoran sandmat

Euphorbia polycarpa—smallseed sandmat

FABACEAE—LEGUME FAMILY

Olneya tesota—ironwood

Psorothamnus schottii—Schott's dalea

Senegalia greggii—catclaw acacia

FOUQUIERIACEAE—OCOTILLO FAMILY

Fouquieria splendens ssp. splendens—ocotillo

KRAMERIACEAE—RHATANY FAMILY

Krameria bicolor—white ratany

LAMIACEAE—MINT FAMILY

Condea emoryi—desert lavender

MALVACEAE—MALLOW FAMILY

Eremalche rotundifolia—desert fivespot

NYCTAGINACEAE—FOUR O'CLOCK FAMILY

Allionia incarnata var. *villosa*—trailing windmills

ONAGRACEAE—EVENING PRIMROSE FAMILY

Eremothera boothii ssp. *condensata*—shredding suncup

POLYGONACEAE—BUCKWHEAT FAMILY

Eriogonum deflexum—flatcrown buckwheat

SOLANACEAE—NIGHTSHADE FAMILY

Datura discolor—desert thorn-apple

ZYGOPHYLLACEAE—CALTROP FAMILY

Kallstroemia californica—California caltrop
Larrea tridentata—creosote bush

MONOCOTS

POACEAE—GRASS FAMILY

Hilaria rigida—big galleta grass
* *Schismus barbatus*—common Mediterranean grass

* signifies introduced (non-native) species

Attachment D

Wildlife List

Wildlife Species

BIRDS

BUSHTITS

AEGITHALIDAE—LONG-TAILED TITS AND BUSHTITS

Psaltriparus minimus—bushtit

PIGEONS AND DOVES

COLUMBIDAE—PIGEONS AND DOVES

Zenaida macroura—mourning dove

INVERTEBRATES

BUTTERFLIES

PIERIDAE—WHITES AND SULFURS

Nathalis iole—dainty sulphur

MAMMALS

HARES AND RABBITS

LEPORIDAE—HARES AND RABBITS

Lepus californicus bennettii—San Diego black-tailed jackrabbit

KANGAROO RATS

HETEROMYIDAE—POCKET MICE AND KANGAROO RATS

Dipodomys deserti—desert kangaroo rat

REPTILES

LIZARDS

TEIIDAE—WHIPTAIL LIZARDS

Aspidoscelis tigris—tiger whiptail

SNAKES

VIPERIDAE—VIPERS

Crotalus cerastes—sidewinder

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Appendix D-7:
Peninsular Bighorn Sheep Data Maps

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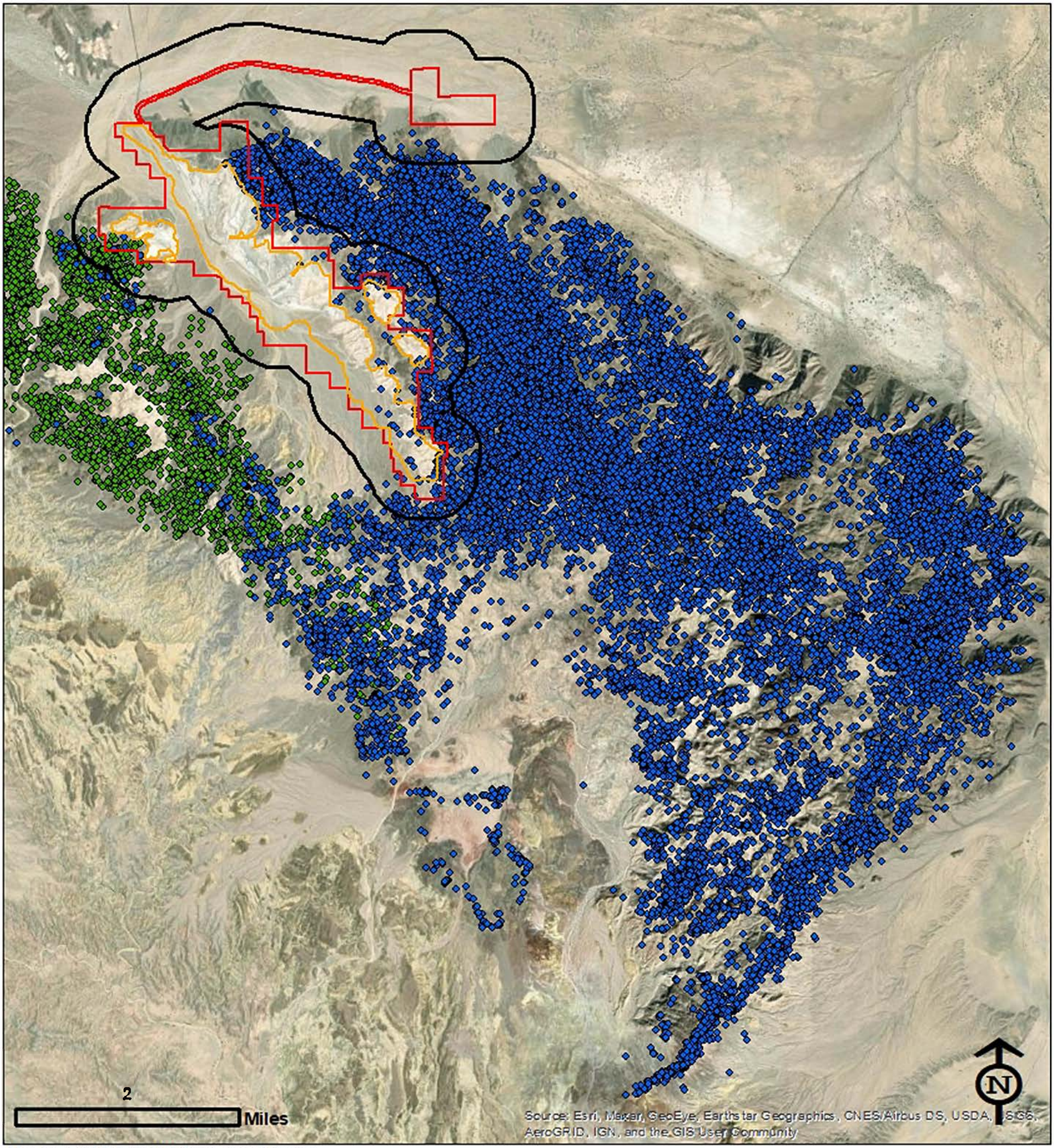
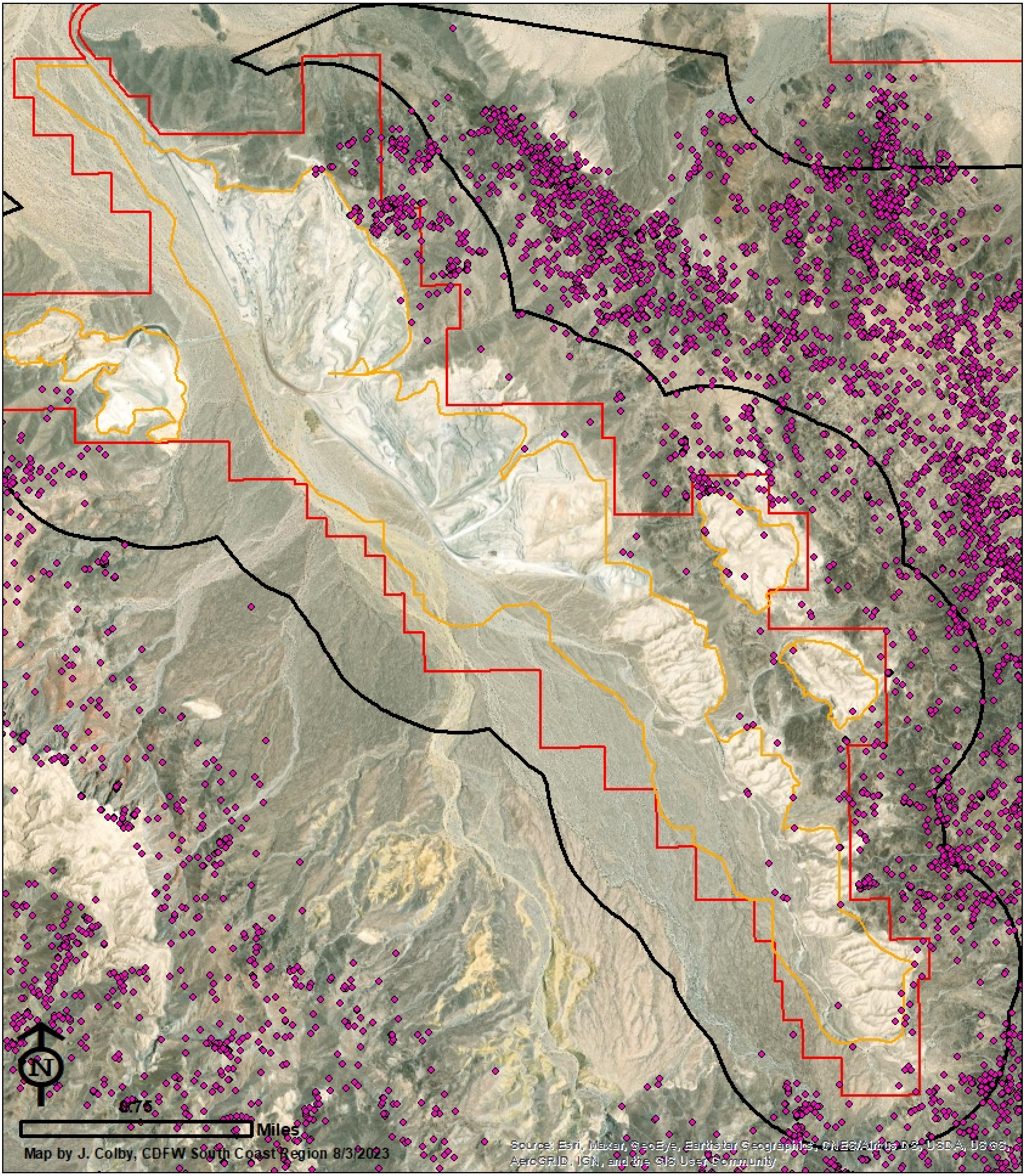


Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Map by J. Colby, CDFW South Coast Region

Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data
in the Fish Creek Mountains, Imperial County, CA.

- ◆ **FCM data for 12 ewes 2015 - 2022**
- ◆ **VM data for 4 Ewes 2015 - 2022**
- ▭ **Plaster City Quarry Project Area**
- ▭ **Quarry Boundary**
- ▭ **Federal Action Area**



Map by J. Colby, CDFW South Coast Region 8/3/2023

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

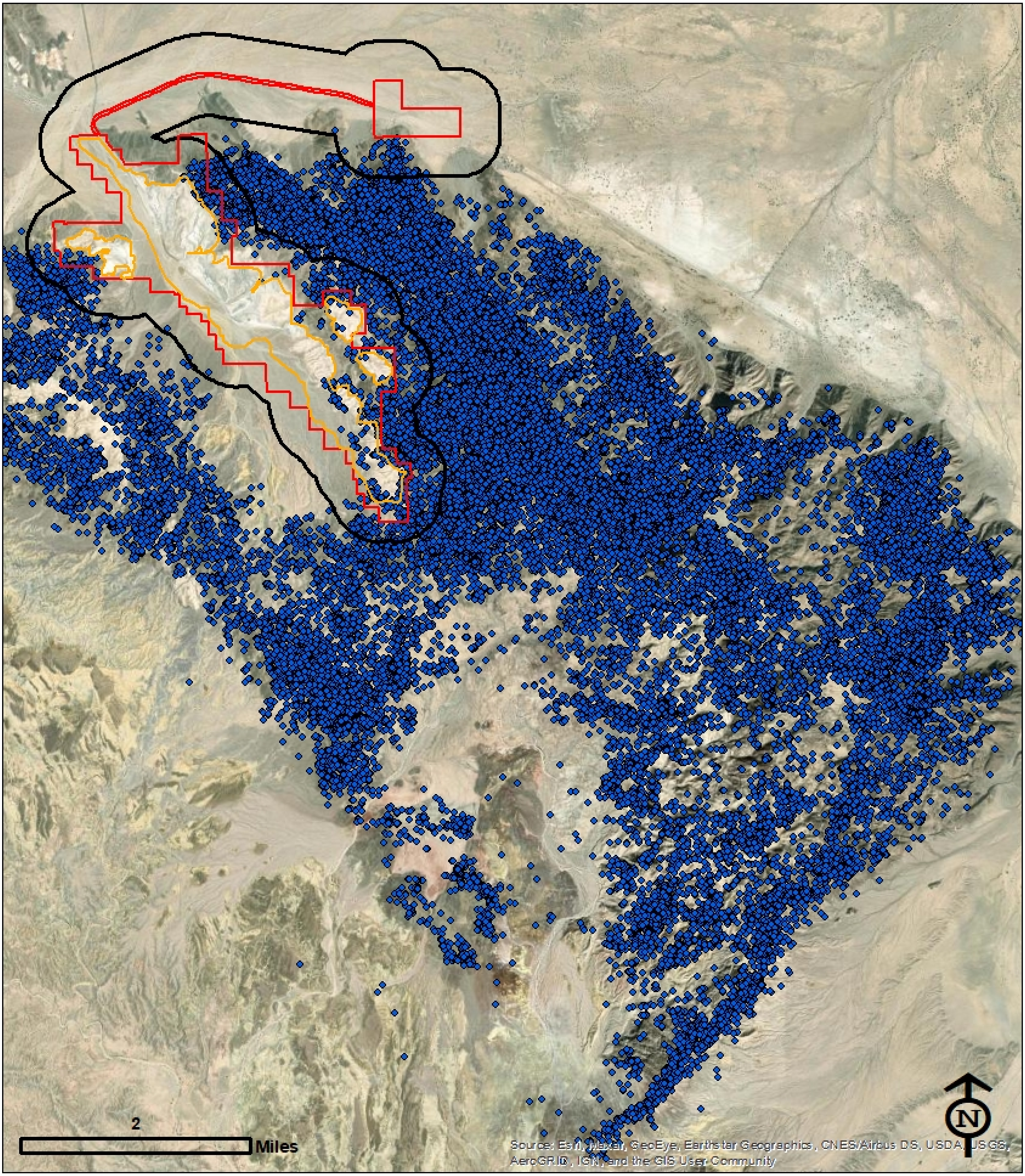
Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data 2015 - 2022
Fish Creek Mountain, Imperial County, CA.

● Lambing season data for 16 ewes (Jan-May)

🟥 Plaster City Quarry Project Area

🟧 Quarry Boundary

⬛ Federal Action Area



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Map by J. Colby, CDFW South Coast Region 8-2-2023

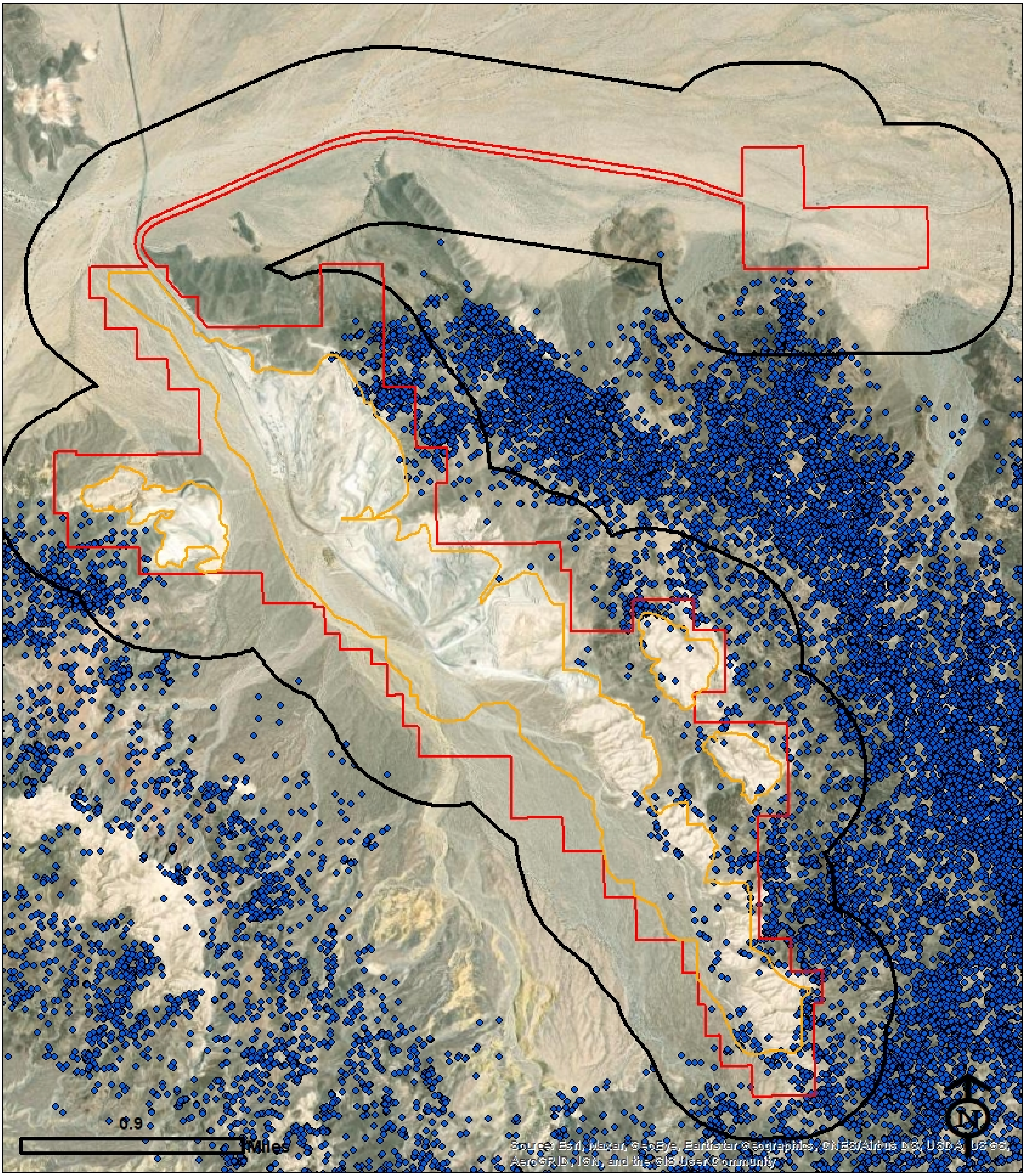
Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data in the Fish Creek Mountain, Imperial County, CA.

● Radio-collared data for 16 PBS 2015 - 2022

🟥 Plaster City Quarry Project Area

🟧 Quarry Boundary

⬛ Federal Action Area



Map by J. Colby, CDFW South Coast Region 8-2-2023

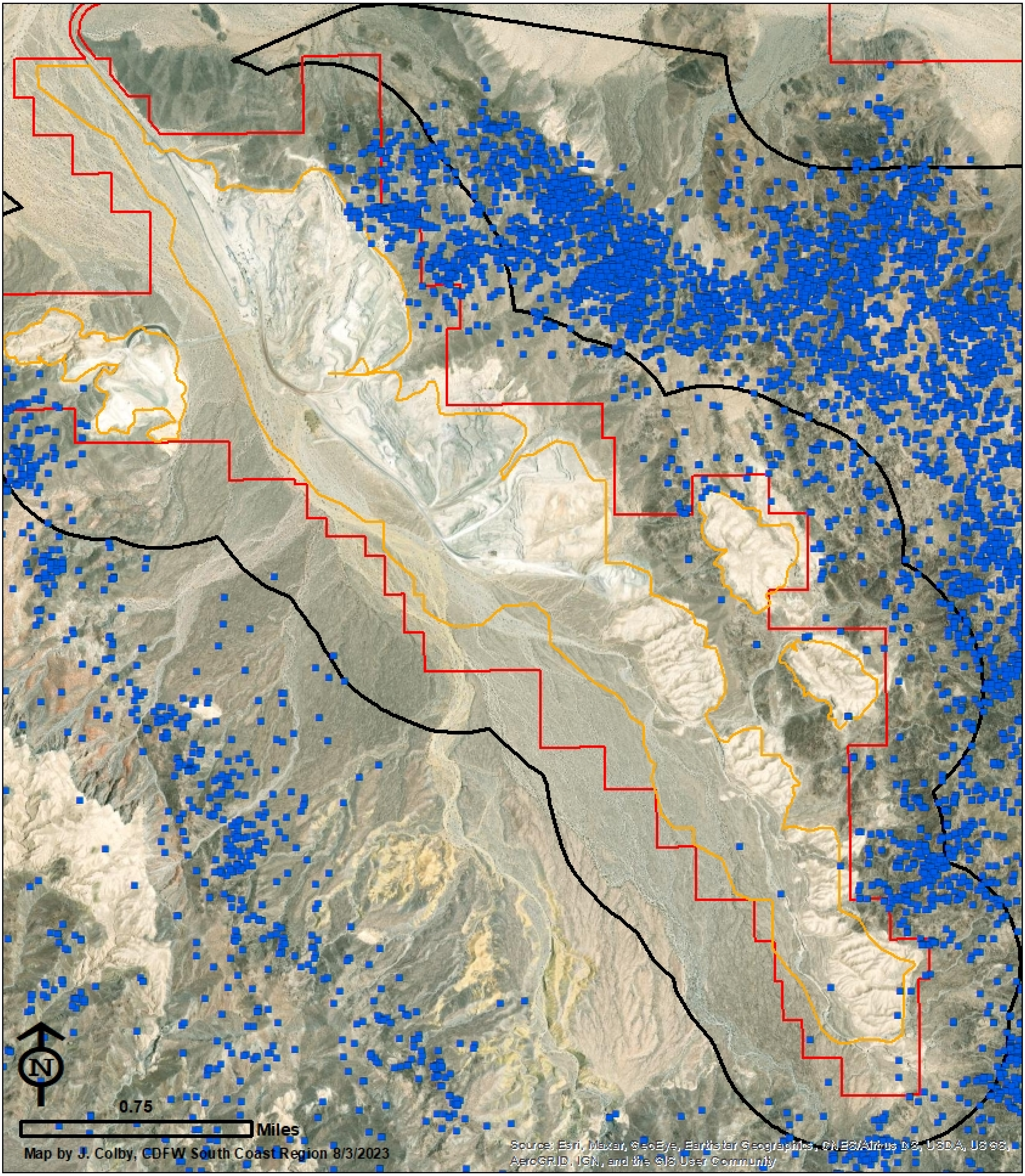
Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data in the Fish Creek Mountain, Imperial County, CA.

● Radio-collared data for 16 PBS 2015 - 2022

□ Quarry Boundary

□ Plaster City Quarry Project Area

□ Federal Action Area

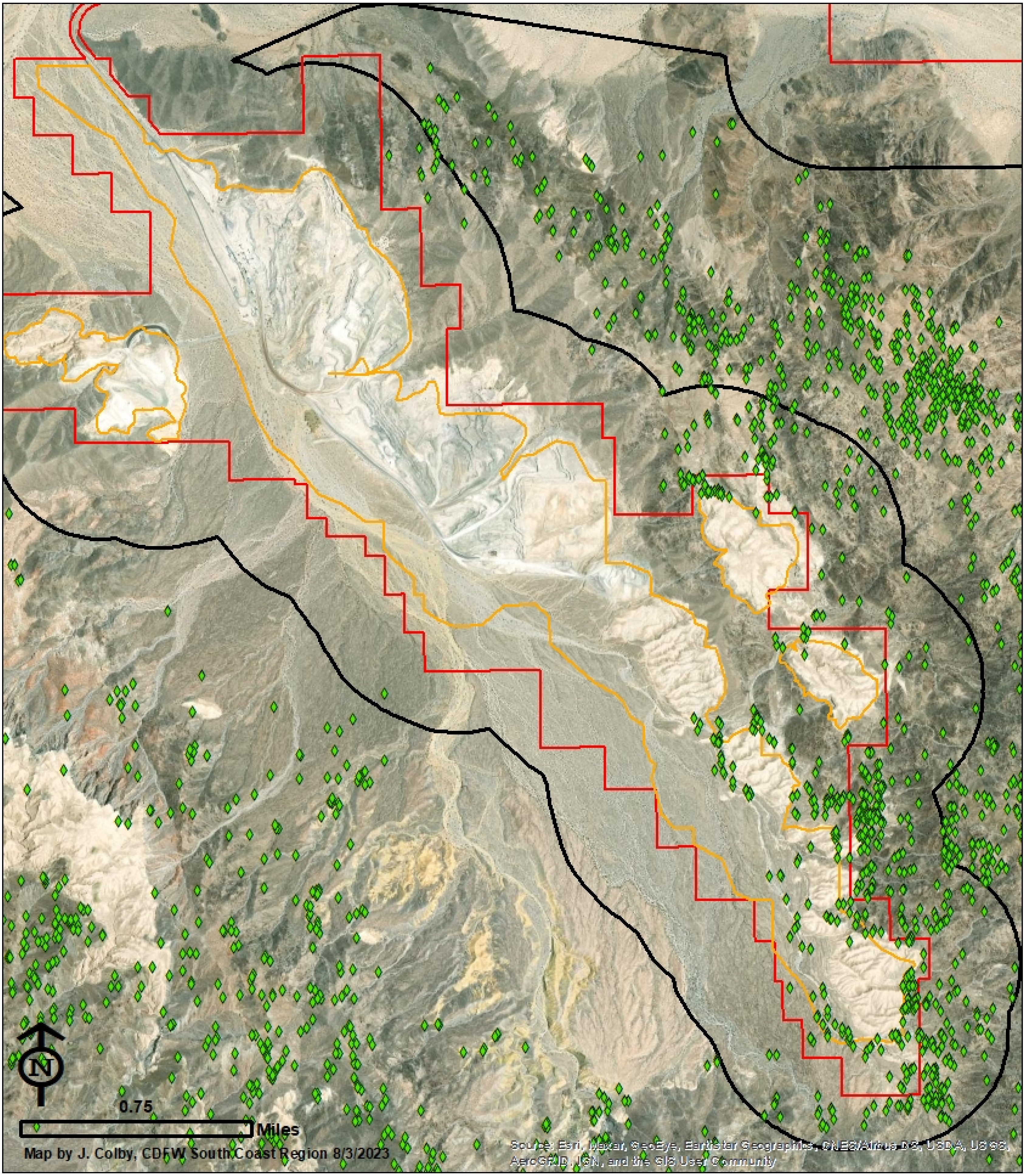


Map by J. Colby, CDFW South Coast Region 8/3/2023

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data 2015 - 2022
Fish Creek Mountain, Imperial County, CA.

- ■ Pre-lambing season data for 16 ewes (Sept - Dec)
- 🟥 Plaster City Quarry Project Area
- 🟧 Quarry Boundary
- ⬛ Federal Action Area



Peninsular Bighorn Sheep (PBS) Radio-Collar Location Data 2015 - 2022
Fish Creek Mountain, Imperial County, CA.

◆ **Summer data for 16 ewes (June - August)**
▭ **Plaster City Quarry Project Area**
▭ **Quarry Boundary**
▭ **Federal Action Area**

APPENDIX D:
ASPEN MEMORANDUM:
UPDATED SITE CONDITIONS

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Aspen
environmental group

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August 7, 2023

John Bowsher
United States Gypsum Company
Plaster City Plant
Quarry Manager

Reg. Updated Site Conditions at the U.S. Gypsum Plaster City Quarry.

Dear Mr. Bowsher:

Aspen Environmental Group (Aspen) has been assisting U.S. Gypsum (USG) with permitting of the Plaster City Quarry and various other biological resource tasks. Aspen recently reviewed a comment letter submitted by the California Department of Fish and Wildlife (CDFW) in response to the public comment period for the Draft Subsequent Environmental Impact Report (SEIR) for the USG Plaster City Quarry Expansion and Well No. 3 Project (project). The SEIR prepared by Imperial County is intended to update the project description and acknowledge mitigation measures that were agreed to in a 2008 Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and a 2019 Supplemental EIS (SEIS).

Project Background
The project includes three components including the quarry, quarry well #3, and the new waterline alignment (see Figure 1 in Attachment 1). Biological resources known from the project site were described in a Biological Resources Technical Report (BRTR) prepared by Aspen for the United States Gypsum Company Expansion and Modernization Project (Appendix D of the SEIR). The BRTR compiled all survey results from surveys conducted between 2002 and 2017 for the project and provided the baseline information for the analysis in the SEIR.

The comment letter from CDFW raised concerns over the fact that the "SEIR lacks a recent and complete assessment of biological resources within the project site and surrounding area." This statement is then supported with additional information from CDFW that states "CDFW generally considers biological field assessments for wildlife to be valid for a one-year period." This comment will be addressed in the responses to comments that Imperial County is currently preparing.

Methods
To inform the conclusions in the response from Imperial County and to support the biological resource baseline information and analysis, a site visit was conducted by Aspen senior biologist Justin Wood on June 15, 2023. The purpose of the visit was to evaluate site conditions at the project site and identify any changes from previous surveys or assessments. Mr. Wood also previously visited portions of the project site on November 11, 2022, after heavy monsoonal storms moved through the region, and observations made during that site visit are also incorporated here. During the site visits, Mr. Wood drove all access roads within the quarry and along the new waterline alignment. He also walked through portions of the various phases within the quarry and the quarry well site. Mr. Wood visited the quarry (excluding phases 6BP and 7BP), quarry well site, and new waterline alignment and captured updated photos of the project site conditions which are presented in Attachment 2. Mr. Wood also completed an updated review of available literature to identify special-status species that are known from the region. This included a

review of the California Natural Diversity Database (CNDDB) for the same 7.5-minute topographic quadrangles (quads) that were quarried for the original literature review including Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, Coyote Wells, Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge (Attachment 3).

Results

In general, site conditions throughout the project site have remained unchanged since the original biological surveys were completed in support of the BRTR and the SEIR. During the field surveys conducted in late 2022 and June of 2023, no new special-status species were identified within the project site and no new species observations were made. Two loggerhead shrikes (*Lanius ludovicianus*), a CDFW Species of Special Concern, were observed within the quarry in June of 2023. Loggerhead shrikes were previously observed at the quarry and are discussed in Section 4.2 of the SEIR. Vegetation is also largely unchanged and includes creosote bush scrub, creosote bush–white bursage scrub, catclaw acacia thorn scrub, smoke tree woodland, desert fir scrub, allscale scrub, tamarisk thickets, and sparsely vegetated sandy wash as described in Section 4.2.1.3 of the SEIR.

The literature review identified four special-status species that were not previously included in the BRTR or SEIR. These include two plants and two invertebrates. Harwood’s eriastrum (*Eriastrum harwoodii*) has a California Rare Plant Rank (CRPR) of 1B.2 and was observed within 1 mile of the quarry well site on March 21, 2017. This was a significant extension of range for this species which is why it wasn’t included in the original literature review and SEIR. Aspen biologists surveyed the quarry well site and new waterline alignment on March 30, 2017, and no Harwood’s eriastrum was observed within the project area. This was confirmed to be a year in which adequate rainfall fell in the region and plants would have been expected to be found, if present. The habitat 1 mile to the east is much sandier and provides better habitat for Harwood's eriastrum, a species which lives in sand dunes. It is unlikely that Harwood's eriastrum is present in the project site or would be impacted by project construction. Borrego bedstraw (*Galium angustifolium* ssp. *borregoense*) was the second plant species that was identified in the literature review. This species is known from higher elevation mountains to the west and southwest of the project site. The project site is well below the species elevation and geographic range, and it is not expected to be present or to be impacted by the project.

The two additional invertebrates that were identified in the literature review were a miner bee (*Perdita stephanomeriae*) and Knull's metallic wood-boring beetle (*Trichinorhipis knulli*). A miner bee has a rank of S1 and is known from three locations in California, all within sand dunes. Knull's metallic wood-boring beetle has a rank of S1S2 and is known from four locations in California, all more than 15 miles from the project site. Neither of these species are expected to occur within the project site or be impacted by the project.

Conclusions

In response to CDFW’s comment letter on the SEIS, Aspen has completed an updated site assessment that shows there has been very little change at the project site since the completion of focused biological surveys that were completed primarily in 2016 and 2017. We have also completed an updated literature review and shown that no additional special-status species are present or expected to be present within the project site. This project memorandum was prepared in support of USG and Imperial County in response to comments received for the SEIR.

Should you need any further information or have any questions, please do not hesitate to contact Justin Wood at (909) 568-5235 or by e-mail at JWood@aspeneg.com.

Sincerely,
ASPEN ENVIRONMENTAL GROUP

Justin Wood, M.S.
Senior Biologist

Attachment 1 – Figure

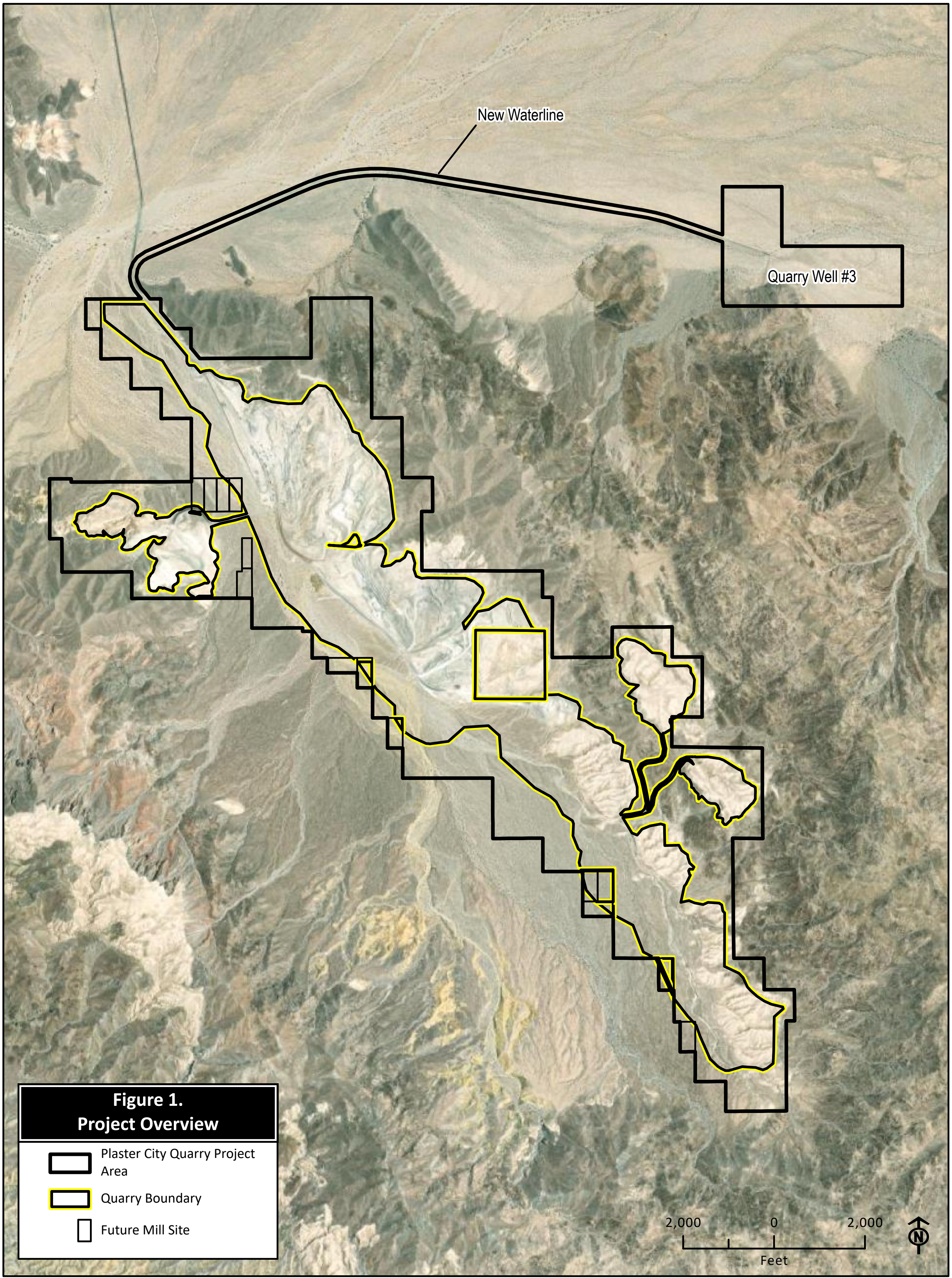

Figure 1.
Project Overview

August 2023

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2023.

Attachment 2 – Photo Exhibit

Photo 1: Overview of project site from top of Phase S1.

Photo 2: Overview of project site from top of Phase S1.

Photo 3: Southeast facing view of Phase 9, near the upper end of the project site.

Photo 4: Overview of the wash habitat within Phase 8.

Photo 5: Overview of incised wash habitat in Phase 8.

Photo 6: Overview of wash habitat within Phase 7.

Photo 7: Overview of additional wash habitat within Phase 8.

Photo 8: Overview of wash habitat within Phase 6.

Photo 9: Overview of typical gypsum habitat near Phase 2.

Photo 10: Overview of Phase S1, S2, and S3 across the wash.

Photo 11: Northwest facing view of the new waterline alignment along Split Mountain Road.

Photo 12: Northwest facing view of the new waterline alignment along Split Mountain Road.


Photo 13: Southwest facing view of the new waterline alignment along USG railroad tracks.


Photo 14: Southwest facing view of the new waterline alignment along USG railroad tracks.


Photo 15: Overview of typical habitat near the quarry well site.


Photo 16: Overview of wash vegetation observed near the new waterline alignment.

Attachment 3 – CNDDB Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Borrego Mountain SE (3311611) OR Borrego Mountain (3311622) OR Shell Reef (3311621) OR Kane Spring NW (3311528) OR Harpers Well (3311518) OR Harper Canyon (3311612) OR Arroyo Tapiado (3211682) OR Carrizo Mtn. NE (3211681) OR Plaster City NW (3211588))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Active Desert Dunes Active Desert Dunes	CTT22100CA	None	None	G4	S2.2	
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Astragalus insularis var. harwoodii Harwood's milk-vetch	PDFAB0F491	None	None	G5T4	S2	2B.2
Astragalus magdalenae var. peirsonii Peirson's milk-vetch	PDFAB0F532	Threatened	Endangered	G3G4T1	S1	1B.2
Astragalus sabulonum gravel milk-vetch	PDFAB0F7R0	None	None	G4G5	S2	2B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S2	SSC
Bursera microphylla little-leaf elephant tree	PDBUR01020	None	None	G4	S2	2B.3
Calliandra eriophylla pink fairy-duster	PDFAB0N040	None	None	G5	S3	2B.3
Chaenactis carphoclinia var. peirsonii Peirson's pincushion	PDAST20042	None	None	G5T2	S2	1B.3
Charadrius montanus mountain plover	ABNNB03100	None	None	G3	S2	SSC
Coleonyx switaki barefoot banded gecko	ARACD01040	None	Threatened	G4	S3	
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Cylindropuntia fosbergii pink teddy-bear cholla	PDCAC0D2U0	None	None	G2	S2	1B.3
Cyprinodon macularius desert pupfish	AFCNB02060	Endangered	Endangered	G1	S1	
Desert Fan Palm Oasis Woodland Desert Fan Palm Oasis Woodland	CTT62300CA	None	None	G3	S3.2	
Eriastrum harwoodii Harwood's eriastrum	PDPLM030B1	None	None	G2	S2	1B.2
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Euphorbia abramsiana Abrams' spurge	PDEUP0D010	None	None	G4	S2	2B.2
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3T1	S2	FP
Lithobates yavapaiensis lowland leopard frog	AAABH01250	None	None	G4	SX	SSC
Lupinus albifrons var. medius Mountain Springs bush lupine	PDFAB2B1J5	None	None	G4T2	S2	1B.3
Lycium parishii Parish's desert-thorn	PDSOL0G0D0	None	None	G4	S1	2B.3
Malperia tenuis brown turbans	PDAST67010	None	None	G4?	S2?	2B.3
Mentzelia hirsutissima hairy stickleaf	PDLOA030K0	None	None	G4?	S3	2B.3
Mesquite Bosque Mesquite Bosque	CTT61820CA	None	None	G3	S2.1	
Neotoma albigula venusta Colorado Valley woodrat	AMAFF08031	None	None	G5T3T4	S1S2	
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G5	S3	SSC
Opuntia wigginsii Wiggins' cholla	PDCAC0D1P0	None	None	G3?Q	S1?	3.3
Ovis canadensis nelsoni pop. 2 Peninsular bighorn sheep DPS	AMALE04012	Endangered	Threatened	G4T3Q	S2	FP
Perognathus longimembris bangsi Palm Springs pocket mouse	AMAFD01043	None	None	G5T2	S1	SSC
Petalonyx linearis narrow-leaf sandpaper-plant	PDLOA04010	None	None	G4	S3?	2B.3
Phrynosoma mcallii flat-tailed horned lizard	ARACF12040	None	None	G3	S3	SSC
Pilostyles thurberi Thurber's pilostyles	PDRAF01010	None	None	G5	S4	4.3
Selaginella eremophila desert spike-moss	PPSEL010G0	None	None	G4	S2S3	2B.2
Stabilized and Partially Stabilized Desert Dunes Stabilized and Partially Stabilized Desert Dunes	CTT22200CA	None	None	G4	S3.2	
Toxostoma lecontei Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Transmontane Alkali Marsh Transmontane Alkali Marsh	CTT52320CA	None	None	G3	S2.1	
Uma notata Colorado Desert fringe-toed lizard	ARACF15020	None	None	G3	S2	SSC
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S3	
Xylorhiza orcuttii Orcutt's woody-aster	PDASTA1040	None	None	G3?	S2	1B.2

Record Count: 43

APPENDIX E:
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE MITIGATION MONITORING AND REPORTING PROGRAM

(CDFW Comment Letter 4a: Attachment 1)

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ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

Mitigation Measures	**Timing and Methods**	**Responsible Parties**
Mitigation Measure BIO-[A]: Assessment of Biological Resources **Prior to adoption of the CEQA document and Project construction activities, a complete and recent inventory of rare, threatened, endangered, and other sensitive species located within the Project footprint and within offsite areas with the potential to be affected, including California Species of Special Concern (CSSC) and California Fully Protected Species (Fish and Game Code § 3511), will be completed. Species to be addressed should include all those which meet the CEQA definition (CEQA Guidelines § 15380). The inventory should address seasonal variations in use of the Project area and should not be limited to resident species. Focused species-specific surveys, completed by a qualified biologist and conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable are required. Acceptable species-specific survey procedures should be developed in consultation with CDFW and the U.S. Fish and Wildlife Service, where necessary. Note that CDFW generally considers biological field assessments for wildlife to be valid for a one-year period, and assessments for rare plants may be considered valid for a period of up to three years. Some aspects of the proposed Project may warrant periodic updated surveys for certain sensitive taxa, particularly if the Project is proposed to occur over a protracted time frame, or in phases, or if surveys are completed during periods of drought.**	**Timing**: Prior to adoption of the CEQA document and Project construction activities **Methods:** See Mitigation Measure	**Implementation**: Imperial County **Monitoring and Reporting**: Imperial County
Mitigation Measure 3.4-9: Burrowing Owl Avoidance **Suitable burrowing owl habitat has been confirmed on the site; therefore, focused burrowing owl surveys shall be conducted in accordance with the Staff Report on Burrowing Owl Mitigation (2012 or most recent version) prior to vegetation removal or ground-disturbing activities associated with all Project components (expansion of quarrying activities**	**Timing**: Prior to the start of Project-related activities for focused surveys. No less than 14 days prior to the start of Project-related activities and within 24	**Implementation**: Project proponent **Monitoring and Reporting**: Imperial County

into previously undisturbed areas, construction of Well #3 and associated pipeline, and restoration of Viking Ranch) over the lifetime of the Project. If burrowing owls are detected during the focused surveys, the qualified biologist and Project proponent, in coordination with BLM, shall prepare a Burrowing Owl Plan that shall be submitted to CDFW and U.S. Fish and Wildlife Service (USFWS) for review and approval prior to commencing Project activities. The Burrowing Owl Plan shall describe proposed avoidance, monitoring, relocation, minimization, and/or mitigation actions. The Burrowing Owl Plan shall include the number and location of occupied burrow sites, acres of burrowing owl habitat that will be impacted, details of site monitoring, and details on proposed buffers and other avoidance measures if avoidance is proposed. If impacts to occupied burrowing owl habitat or burrow cannot be avoided, the Burrowing Owl Plan shall also describe minimization and relocation actions that will be implemented. Proposed implementation of burrow exclusion and closure should only be considered as a last resort, after all other options have been evaluated as exclusion is not in itself an avoidance, minimization, or mitigation method and has the possibility to result in take. If impacts to occupied burrows cannot be avoided, information shall be provided regarding adjacent or nearby suitable habitat available to owls along with proposed relocation actions. The Project proponent shall implement the Burrowing Owl Plan following CDFW and USFWS review and approval. **Preconstruction burrowing owl surveys shall be conducted no less than 14 days prior to the start of Project-related activities and within 24 hours prior to ground disturbance, in accordance with the *Staff Report on Burrowing Owl Mitigation* (2012 or most recent version). Preconstruction surveys should be performed by a qualified biologist following the recommendations and guidelines provided in the *Staff Report on Burrowing Owl Mitigation*. If the preconstruction surveys confirm occupied burrowing owl habitat, Project activities shall be immediately halted. The qualified biologist shall coordinate with CDFW and USFWS to conduct an impact assessment to develop avoidance,**	hours prior to ground disturbance for preconstruction surveys. **Methods:** See Mitigation Measure	

minimization, and mitigation measures to be approved by CDFW and USFWS prior to commencing Project activities.		
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […] **Regardless of the time of year, nesting bird surveys shall be performed by a qualified avian biologist no more than 3 days prior to vegetation removal or ground-disturbing activities associated with all Project components (the expansion of quarrying activities into previously undisturbed areas, the construction of Well #3 and associated pipeline, and restoration of Viking Ranch) and over the lifetime of the Project. Pre-construction surveys shall focus on both direct and indirect evidence of nesting, including nest locations and nesting behavior. The qualified avian biologist will make every effort to avoid potential nest predation as a result of survey and monitoring efforts. If active nests are found during the pre-construction nesting bird surveys, a qualified biologist shall establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be at least 300 feet for passerines and 500 feet for raptors. A smaller or larger buffer may be determined by the qualified biologist familiar with the nesting phenology of the nesting species and based on nest and buffer monitoring results. Established buffers shall remain on-site until a qualified biologist determines the young have fledged or the nest is no longer active. Active nests and adequacy of the established buffer distance shall be monitored daily by the qualified biologist until the qualified biologist has determined the young have fledged or the Project has been completed. The qualified biologist has the authority to stop work if nesting pairs exhibit signs of disturbance.** [...]	**Timing**: No more than 3 days prior to vegetation removal or ground-disturbing activities for all phases of the Project **Methods:** See Mitigation Measure	**Implementation**: Imperial County **Monitoring and Reporting**: Imperial County

Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats **Prior to the initiation of Project activities within suitable bat roosting habitat, Imperial County shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn re-entry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the Project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be used during all dusk emergence and pre-dawn re-entry surveys.** **If active hibernacula or maternity roosts are identified in the work area or 500 feet extending from the work area during preconstruction surveys, for maternity roosts, quarry expansion activities into undisturbed habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.** **A minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, Project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise.**	**Timing**: Prior to grading or vegetation removal activities **Methods:** See Mitigation Measure	**Implementation**: Imperial County **Monitoring and Reporting**: Imperial County

Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of Project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of Project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.		
Mitigation Measure 3.4-8: Wildlife Impact Avoidance and Minimization Measures […] **Throughout the lifetime of the Project, the Project proponent shall eliminate all nonessential lighting throughout the Project area and avoid or limit the use of artificial light during the hours of dawn and dusk when many wildlife species are most active. Imperial County shall ensure that all lighting for the Project is fully shielded, cast downward, reduced in intensity to the greatest extent, and does not result in lighting trespass including glare into surrounding areas or upward into the night sky (see the International Dark-Sky Association standards at http://darksky.org/). Imperial County shall ensure use of LED lighting with a correlated color temperature of 3,000 Kelvins or less, proper disposal of hazardous waste, and recycling of lighting that contains toxic compounds with a qualified recycler.** […]	**Timing**: Throughout the lifetime of the Project **Methods:** See Mitigation Measure	**Implementation**: Project proponent and Imperial County **Monitoring and Reporting**: Imperial County

Mitigation Measure BIO-[C]: Lake and Streambed Alteration Program **Prior to construction and issuance of any grading permit, the Project Sponsor shall obtain written correspondence from the California Department of Fish and Wildlife (CDFW) stating that notification under section 1602 of the Fish and Game Code is not required for the Project, or the Project Sponsor shall obtain a CDFW-executed Lake and Streambed Alteration Agreement, authorizing impacts to Fish and Game Code section 1602 resources associated with the Project.**	**Timing**: Prior to construction and issuance of any grading permit **Methods:** See Mitigation Measure	**Implementation**: Project Sponsor **Monitoring and Reporting**: Imperial County

APPENDIX F:
ASPEN MEMORANDUM:
PBS IMPACTS AND MITIGATION

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Aspen environmental group

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Upland, CA 91786
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PROJECT MEMORANDUM
UNITED STATES GYPSUM EXPANSION/MODERNIZATION PROJECT

Date: September 7, 2023
To: Luis Carrazco, Unite States Gypsum
From: Scott D. White
Subject: Peninsular Bighorn Sheep impacts and mitigation

Aspen Environmental Group has reviewed communications from the California Department of Fish and Wildlife (CDFW) to Imperial County, which recommend additional mitigation of potential impacts of the United States Gypsum (USG) Expansion and Modernization Project to Peninsular bighorn sheep (PBS). CDFW's recommendations, if adopted by the County, would expand on mitigation measures already included in the County's Draft Subsequent Environmental Impact Report (SEIR) and required for the project by Bureau of Land Management's (BLM) project approval pursuant to the National Environmental Policy Act (NEPA) and the BLM's consultation with US Fish and Wildlife Service (USFWS) pursuant to the federal Endangered Species Act (ESA). This memorandum summarizes analysis and conclusions regarding potential impacts to PBS, and summarizes mitigation measures included in the Draft SEIR and already required of the project under existing federal approvals. We believe that these mitigation requirements, without further mitigation, would reduce potential Project impacts to PBS to less than significant and that the CDFW recommendations are therefore unwarranted.

FEDERAL AGENCY REVIEW AND CONCLUSIONS

The USFWS concluded in its Biological Opinion (BO, 2019, copy attached) that the project, including Conservation Measures (CMs) 1–12, specified in the BO beginning on page 10, would not jeopardize continued existence of PBS (i.e., a "no jeopardy" opinion). The BO's conclusions, beginning on page 30, state (quoted in full):

> *1. While the proposed Project is adjacent to habitat with resources that support feeding, breeding, and sheltering, and Peninsular bighorn sheep occur within the mountains surrounding the Project site, location data from radio-collared sheep indicate that Peninsular bighorn sheep use the hillsides and slopes rather than the canyon where the Project is located; therefore, most of the resources to support reproduction, numbers, and distribution of the species will be avoided by mining and reclamation activities.*
>
> *2. Peninsular bighorn sheep continue to use habitat in and around the action area despite active mine operations ongoing since 1921. Because ewe groups adjacent to active mining have become accustomed to some degree to human presence and noise and the Project will be implemented incrementally in phases over the course of 80 years, we expect the increase of noise and human activity would not result in sheep abandoning the hillsides around the Project site and the existing distribution of sheep around the mine will be unaffected.*
>
> *3. The adverse effects of mine expansion and reclamation activities on reproduction would be avoided and/or minimized by implementation of conservation measures described above in the Description of the Proposed Action section.*
>
> *4. The rugged mountain habitat on three sides of the Project, which includes critical habitat, would continue to provide necessary resources essential to the conservation of the species.*

> *5. The potential loss of up to 608.2 acres of designated critical habitat represents a negligible percentage of the designated critical habitat otherwise available to the population in the recovery region, and this potential loss would not disrupt population connectivity or cause other significant impacts to the physical and biological features in the action area. Therefore, the Project would not result in the adverse modification or destruction of critical habitat that would appreciably diminish the value of critical habitat as a whole for the conservation of the species.*

The BLM's Record of Decision for the Project (ROD, 2020) specifies that "The Applicant will be required to comply with the BO as a condition of the ROW grants and Mining Plan of Operations."

PBS OCCURRENCE AND HABITAT USAGE IN THE PROJECT VICINITY

The USFWS, BLM, and preparers of the Project's Supplemental Environmental Impact Statement (SEIS, 2019), considered the PBS occurrence and habitat usage in the SEIS analysis (SEIS Section 3.4 and Biological Resources Technical Report [BRTR], Appendix L to the SEIS, copy attached). The BRTR's discussion of PBS appears in Section IV. D. 2., Special-status Wildlife, of the BRTR (pages 26-30). The analysis is based on then-current PBS radio-collar location data in the quarry vicinity, shown in BRTR Figure 5. In summary, these location data show:

- Extensive PBS occurrence upslope from the existing quarry areas and expansion areas
- Infrequent occurrence on the expansion area phases 6Bp, 7Bp, 8, and 9
- Infrequent occurrence in the alluvial wash, west of expansion Phase 9.

The occurrence data provided in the BRTR, forming the basis for the SEIS analysis, are substantially similar to the occurrence data provided by CDFW in its recent communications.

Additionally, research literature supports the interpretation that Nelson's bighorn sheep (the same species as PBS, albeit differing populations) will acclimate to mining activities. And the available location data (both CDFW's updated maps and the data cited above) indicate regular PBS occurrence in the vicinity of the active USG quarry. The following text is excerpted from the BRTR (full literature citations may be found in the BRTR):

> *There are several research publications on Nelson's bighorn sheep activity in the vicinity of mining operations. None of these papers addresses PBS; however the following three address Nelson's bighorn sheep populations in arid habitats in California or Arizona that are comparable to the Plaster City Quarry site. The summary that follows is based on these three publications, particularly the discussion by Bleich and coauthors (2009), which is the most recent of the three, comparing and contrasting their own study results with the others and with broader Nelson's bighorn sheep literature.*
>
> - *Panamint Mountains, California (Oehler et al., 2005)*
> - *Silver Bell Mountains, Arizona (Jansen et al., 2007)*
> - *San Bernardino Mountains, California (Bleich et al., 2009)*
>
> *Bleich and coauthors (2009) state that "the characteristic that best defines mountain sheep habitat is the presence of escape terrain," and that many habitat studies have found that juxtaposition of escape terrain with valuable water or food sources has been important. They identify potential mining-related habitat benefits and deterrents, as follows: Mining can enhance escape terrain by removing vegetation (i.e., improving visibility) and creating steeper topography, especially if the improved escape terrain is near valuable food or water sources. However, mining-related disturbance could outweigh the benefits of improved escape terrain if it causes sheep to avoid the quarry areas. They found that Nelson's bighorn sheep in the San Bernardino Mountains limestone mining areas*

> *generally avoided roads (human disturbance) but did not avoid mined areas and in fact favored them over random locations.*
>
> *Bleich and coauthors (2009) cite several publications indicating that Nelson's bighorn sheep can habituate to disturbance, and are frequently observed on or near active mines, stating "we speculate that such disturbance is of minimal concern to sheep when it is consistent in nature and occurs in highly predictable locations." In the Panamint Mountains study, Oheler and coauthors found that proximity to active mining did not affect home ranges, diet composition, or demographic indices, and that Nelson's bighorn sheep activity in the mining area was not affected by frequency of blasting or mine productivity.*

The combination of PBS habitat usage near the existing quarry and expansion areas, along with the scientific literature summarized above, support the USFWS's conclusion (above), that mining activities are not expected to cause PBS to alter its local distribution.

CDFW MITIGATION RECOMMENDATIONS

The CDFW communications recommend two measures that would expand on mitigation already required under federal approvals, quoted from CDFW email of August 17, 2023:

> *CDFW recommends that no mining activities occur in the southern section of the quarry boundary during the lambing season or minimally not to occur during the peak of lamb-rearing season (February – April).*

and

> *... mitigation funds should be made available to CDFW for on-going radio-collaring activities and field monitoring studies within the FCM [Fish Creek Mountains]*

and in a separate email dated August 24, 2023:

> *CDFW recommends that this measure is revised to indicate that funding will be provided for the purchase of radio-collars and capture of ten (10) PBS in the Fish Creek Mountains and ten (10) PBS in the Vallecito Mountains, not ten total in both areas.* [at total cost of $590,826]

FEDERAL AGENCY MITIGATION REQUIREMENTS INCLUDED IN THE DRAFT SEIR

1. ***Disturbance minimization and PBS avoidance during lambing season***

Mitigation already required in the BO and ROD addresses the potential for PBS disturbance during lambing season in certain quarry areas (CDFW's first recommendation). Conservation Measure CM 11 (p 14 of the BO) requires that:

> *Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9* [i.e., the southern and southeastern quarry expansion areas nearest to documented PBS occurrences] *by building up a stockpile of material during the other months.*
>
> *The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities, and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if Peninsular bighorn sheep are within a 0.25-mile radius of the activity.*
>
> *If a Peninsular bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Plaster City Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify the BLM, CDFW, and the Service.*

The BLM's Final SEIS (p. 3.4-22) and the County's Draft SEIR (p. 4.2-47) incorporate these measures and expand on them in Mitigation Measure 3.4-12 requiring that "New ground-disturbing activities (i.e., initial Quarry development, Quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within PBS lambing season (January 1 through June 30) as defined in the Recovery Plan, except with prior approval by the wildlife agencies."

These components of CM 11 and MM 3.4-12 are intended to minimize potential disturbance to PBS in the mining expansion areas, taking into account that PBS are expected to acclimate to quarry activities after mining begins in each new expansion area (as documented for other populations and anticipated in USFWS's conclusions in the BO). We note that CDFW asks if this requirement applies only to new ground disturbance, or to continuing activities in already disturbed areas. As clarification, the requirement is intended only to apply to disturbance in previously undisturbed areas (i.e., the establishment phase of quarry expansion areas). As above, the mitigation considers the known PBS behavior and habitat use around quarries.

2. *PBS radio collar location monitoring*

Additional mitigation already required in the BO and ROD address CDFW's second recommendation, that USG fund its existing PBS radio collar monitoring program in the Fish Creek and Vallecito mountains for the life of the Project. CM 10 (p. 14 of the BO) specifies that USG will fund a 10-year monitoring program, as follows:

> *... USG will fund the purchase of radio collars and the capture of 10 Peninsular bighorn sheep in the Fish Creek Mountains and Vallecito Mountains ewe group areas, to provide location monitoring data within these ewe groups over a 10-year period. The funding amount will be $157,115 (per cost estimate provided by CDFW), to be transferred to the CDFW program via a means agreed upon by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek Mountains and Vallecito Mountains ewe groups, and all resulting data will be available to BLM to support the long-term analysis of Peninsular bighorn sheep activities in the Federal action area.*

This measure is included, with slightly different wording, as Mitigation Measure 3.4-11 of the SEIS (p. 3.4-22) and SEIR (p. 4.2-47). Although PBS are expected to acclimate to mining activities, this 10-year monitoring requirement, to be implemented by CDFW, will identify any potential divergence of local PBS behavior from previous studies of other populations around mines. Further, Mitigation Measure 3.4-13 (SEIS p. 3.4-22, SEIR p. 4.2-48) requires BLM, USFWS, and CDFW review of PBS monitoring data prior to new mining activities in the expansion areas nearest the highest PBS occurrences, as follows:

> *Mitigation Measure 3.4-13. Future Quarry Phasing Notification and Review. USG will notify the BLM, CDFW, and USFWS 90 days prior to initiating future mining activities in the four phases nearest to the highest PBS occurrence and habitat connectivity areas (phases 6Bp, 7Bp, 8, and 9). Upon notification, the agencies will coordinate with USG to review PBS occurrence and activity in the vicinity obtained during the intervening years, as well as relevant documentation of Nelson's bighorn sheep behavior near other mining operations. PBS avoidance and minimization measures may be revised as needed to conform to new information.*

While additional PBS location data over the ensuing 70 years may be scientifically valuable, Aspen does not believe it would mitigate any potential Project impact. Neither the BLM, the USFWS, nor the County found it necessary to require continued monitoring of PBS locations for the life of the Project.

The CDFW provides a budget of $590,826 for a 10-year radio collar monitoring project, contrasting with the $157,115 identified in the BO and SEIS. The principal difference between the two cost estimates is that the original (lower) estimate provides for capturing, collaring, and monitoring 10 individual PBS in the Fish Creek and Vallecito mountains. That estimate was provided by CDFW staff to USFWS and BLM staff during the federal Endangered Species Act consultation for the project. CDFW recommends, instead, that USG fund the capture, collaring, and monitoring of 20 total PBS in the same mountain ranges. CDFW notes in its email to the County:

> *However, the monitoring measure presented in the 2019 (and 2023) document is different from the monitoring proposal CDFW discussed and provided to the U.S. Fish and Wildlife Service and the Bureau of Land Management. CDFW recommends that this measure is revised to indicate that funding will be provided for the purchase of radio-collars and capture of ten (10) PBS in the Fish Creek Mountains and ten (10) PBS in the Vallecito Mountains, not ten total in both areas.*

Neither Aspen nor USG were party to CDFW's discussions with the federal agencies, but it is evident that the USFWS and BLM believed that funding for 10 radio-collared PBS was sufficient to support the BO's "no jeopardy" conclusion and issue the ROD approving the project. The CDFW does not include evidence to the contrary, nor does it identify a potential impact that would be mitigated by doubling the scope of the monitoring project (and more than tripling the cost). We note that the existing data set (provided by CDFW) is already significant and the addition of 10 newly collared animals would substantially expand the existing monitoring program. We recognize that cost to capture, collar, and monitor 10 PBS will probably increase due to inflation since 2019, but we do not agree that expanding the project to include 20 PBS, or that expanding it to continue over the life of the project are warranted.

In conclusion, Aspen believes that mitigation already required under existing federal approvals and identified in the Draft SEIR will mitigate potential Project impacts to PBS to a level less than significant under CEQA, and that CDFW's recommended additional mitigation is unneeded.

Finally, Aspen recommends that the County clarify in the Final SEIR that the requirement to conduct federal consultation (Mitigation Measure 3.5-1d of the 2008 EIR/EIS) has been completed. The BLM and USFWS have concluded their ESA consultation, the USFWS has issued a "no jeopardy" BO, and that USG is obligated under its federal authorizations to comply with the CMs and MMs found in the BO and Final SEIS. Additionally, we suggest adding a condition or measure that USG shall comply with all conditions and conservation measures imposed by the BLM and USFWS.

LITERATURE CITED

Aspen (Aspen Environmental Group). 2019. Biological Resources Technical Report: United States Gypsum Company Expansion and Modernization Project. Prepared for Lilburn Corporation, San Bernardino, CA. https://eplanning.blm.gov/public_projects/nepa/103341/20009737/250011396/USG_Final_SEIS_Appendices_L_-_Q.pdf

BLM (Bureau of Land Management). 2019. United States Gypsum Mine Expansion/Modernization Project: Final Supplemental Environmental Impact Statement. El Centro Field Office, El Centro CA. https://eplanning.blm.gov/public_projects/nepa/103341/20009734/250011393/Final_SEIS_November_2019.pdf

BLM (Bureau of Land Management). 2000. Record of Decision: United States Gypsum Mine Expansion/Modernization Project. El Centro Field Office, El Centro CA. https://eplanning.blm.gov/public_projects/nepa/103341/20012100/250016478/US_Gypsum_ROD_508.pdf

USFWS (US Fish and Wildlife Service). 2019. Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California. Memorandum from USFWS Carlsbad Field Office to BLM El Centro Field Office, November 22 2019. https://eplanning.blm.gov/public_projects/nepa/103341/20012159/250016542/Appendix_C_US_Gypsum_Mine__Biological_Opinion.pdf

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer to:
FWS-ERIV-11B0345-19F1352

November 22, 2019
Sent by Email

Memorandum

To: Field Manager, Bureau of Land Management, El Centro Field Office
El Centro, California
Attention: Mark Massar

From: Field Supervisor, Carlsbad Fish and Wildlife Office
Carlsbad, California

Subject: Section 7 Biological Opinion for the United States Gypsum Company Expansion/Modernization Project, Imperial County, California

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the proposed issuance of a right-of-way (ROW) grant by the Bureau of Land Management (BLM) and proposed issuance of an individual permit under section 404 of the Clean Water Act by the U.S. Army Corps of Engineers (Corps) that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine operated by U.S. Gypsum Company (USG, or Applicant) in Imperial County, California. In accordance with the National Environmental Policy Act, the BLM is the lead Federal agency and the Corps is identified as a cooperating agency. This biological opinion analyzes the effects of the gypsum mine expansion on the federally endangered distinct population segment of Nelson bighorn sheep (Peninsular Range DPS; Peninsular bighorn sheep) *[Ovis canadensis nelson]* and its designated critical habitat in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 *et seq*.).

Updates to the regulations governing interagency consultation (50 CFR 402) were effective on October 28, 2019 (84 FR 44976). This consultation was pending at that time, and we are applying the updated regulations to the consultation. As the preamble to the final rule adopting the regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." We have reviewed the information and analyses relied upon to complete this biological opinion in light of the updated regulations and conclude the biological opinion is fully consistent with the updated regulations.

This biological opinion is based on information provided in the following documents and communications: (1) Biological Assessment: United States Gypsum Company Expansion/Modernization Project (BLM 2019a); (2) Imperial County, California, United States

Gypsum Company Expansion/Modernization Project Final Environmental Impact Report/Environmental Impact Statement (Resource Design Technology, Inc. 2008, hereinafter 2008 Final EIR/EIS); (3) United States Gypsum Company Expansion/Modernization Project Imperial County, California, Draft Supplemental Environmental Impact Statement (BLM 2019b, hereinafter 2019 Draft Supplemental EIS), (4) 2018 Revised Plan of Operation (USG 2018); (5) written, telephone, and electronic mail correspondence received during the consultation time period; and (6) pertinent literature contained in our files. The project file for this consultation is located at the Carlsbad Fish and Wildlife Office.

CONSULTATION HISTORY

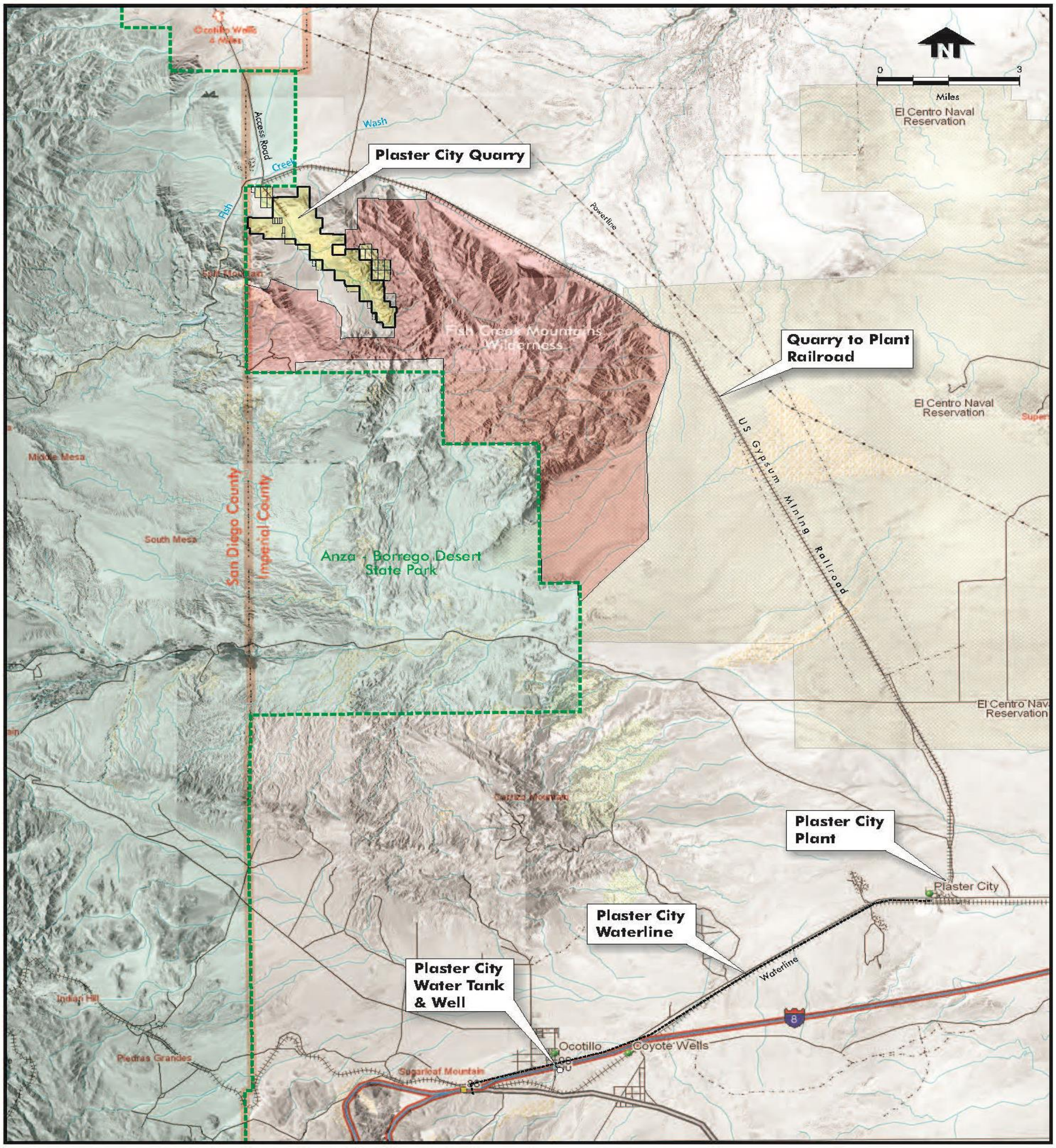
In 2008, the BLM initiated section 7 consultation with the Service to determine if the Gypsum Mine Expansion and Modernization Project (Project) as described in the 2008 Final EIR/EIS would adversely affect the Peninsular bighorn sheep or adversely modify its designated critical habitat. The BLM and the Service did not complete the section 7 consultation and the BLM did not issue a Record of Decision. In 2014, USG requested the BLM issue a Record of Decision for the Project. Coordination between the BLM and the Corps in 2015 led to the determination that a 2019 Supplemental EIS must be prepared to analyze new information and changes to the proposed action that have occurred since the release of the 2008 Final EIR/EIS.

Between February 2015 and August 2019, staff from the Palm Springs Fish and Wildlife Office (PSFWO) worked with the BLM, USG, the Corps, and staff from the California Department of Fish and Wildlife (CDFW) to clarify the project description, Project build-out scenarios, effects to Peninsular bighorn sheep and desert pupfish, and avoidance and minimization measures. The BLM and Corps determined there would be no effect to desert pupfish or its designated critical habitat with implementation of the Project. Their determination is based on information provided in the biological assessment indicating that there is no desert pupfish suitable habitat within Project impact areas and there would be no adverse effects on downstream surface water or groundwater in occupied desert pupfish habitat in San Felipe Creek. Efforts to clarify these issues included participating in site visits and meetings, assessing baseline conditions, and providing comments on the Project’s draft biological assessment (BLM 2019a).

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The proposed action is the BLM’s issuance of a ROW grant and the Corps issuance of Clean Water Act section 404 individual permit that would authorize construction, operation, and reclamation activities associated with the expansion and modernization of an existing gypsum mine. The ROW grant and individual permit would cover mining and reclamation activities for approximately 80 years, which includes mining and final reclamation (i.e., restoration) activities. The USG mine is located on the lower slopes of the Fish Creek Mountains in western Imperial County, California (Figure 1).



Source: Tiled USGS ¼ Panel 7.5 min. Quads, 1996.

Project Location

Prepared By:
LILBURN
CORPORATION

United States Gypsum Company - Plaster City Quarry
County of Imperial, California

Figure 1: USG Company Expansion/Modernization Project – Project Component Areas

Mining activities have been ongoing since 1922 and USG has owned and continuously operated the quarry since 1945. Since 1922, the amount of gypsum production has varied based on demand, so mining and processing activities are reduced during times of low gypsum demand, e.g., during economic recessions. Currently, mining operations cover approximately 431 acres (Table 1). The Phases and associated acreage impacts are only for the Plaster City Quarry Expansion Project component.

Table 1. USG Company Plaster City Quarry Expansion Existing and Future Phase Acres

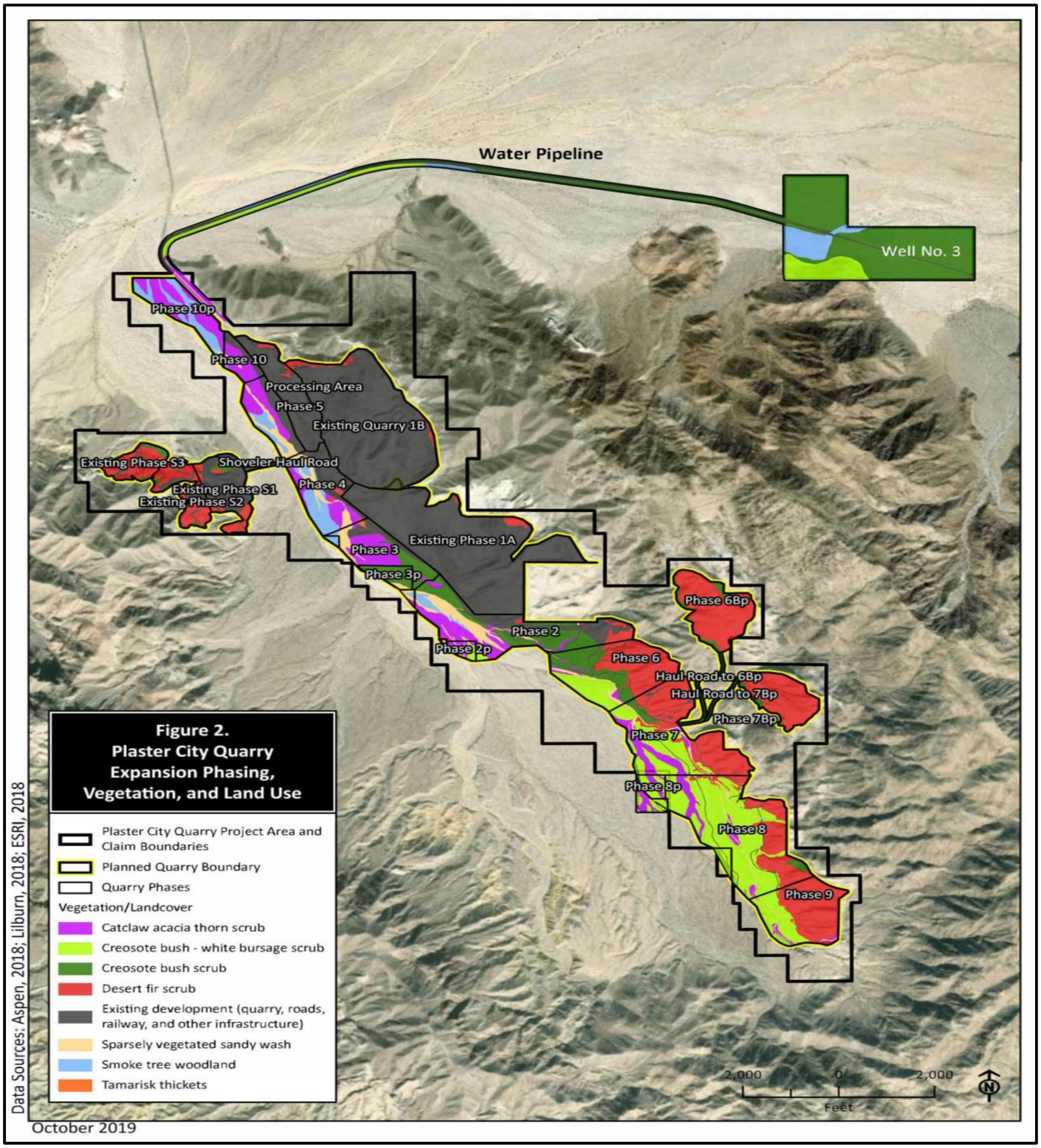
Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Existing Phase 1A	Existing mining	163.3	0	0
Existing Phase 1B	Existing mining	150.1	0	0
Existing Phase S1	Existing mining	32	0	0
Existing Phase S2	Existing mining	24.4	0	0
Existing Phase S3	Existing mining	19	0	0
Processing Area	Existing mining	39.1	0	0
Existing Shoveler Haul Road	Existing mining	3	0	0
Total	Existing mining	430.9	0	0
Phase 2	Partially disturbed by existing mining	87.9	66.7	21.2
Phase 3	Partially disturbed by existing mining	36.4	33.5	2.9
Phase 4	Partially disturbed by existing mining	46.5	31.3	15.2
Phase 5	Partially disturbed by existing mining	31	17.3	0
Phase 6	Partially disturbed by existing mining	71.2	70.5	0.7
Total	Partial disturbance	273	219.3	40
Phase 2p	Undisturbed	5.4	5.4	0
Phase 3p	Undisturbed	10.9	10.9	0
Phase 6Bp	Undisturbed	47.2	47.2	0
Phase 6 Haul Road	Undisturbed	3.6	3.6	0

Phase Name	Habitat Condition	Phase Area (Acres)	Designated Critical Habitat (Acres)	Designated Critical Habitat Existing Disturbance (Acres)
Phase 7	Undisturbed	91.5	91.5	0
Phase 7Bp	Undisturbed	32.4	32.4	0
Phase 7 Haul Road	Undisturbed	1.7	1.7	0
Phase 8	Undisturbed	116.4	116.4	0
Phase 8p	Undisturbed	6.8	6.8	0
Phase 9	Undisturbed	54.3	54.3	0
Phase 10	Undisturbed	13.3	0	0
Phase 10p	Undisturbed	34.5	0	0
Mill Site Claims	Undisturbed	18.7	18.7	0
Total	Undisturbed	436.7	388.9	0
Grand Totals		**1,140.6**	**608.2**	**40**

In addition to the Plaster City Quarry, USG operates a manufacturing plant (USG Plaster City Plant) for wallboard and other gypsum products at Plaster City in southwestern Imperial County, located about 26 miles southeast of the quarry (see Figure 1). The proposed replacement pipeline and canal pipeline as described below would serve the Plaster City Plant. USG also operates a narrow-gauge railroad line to deliver gypsum ore from the Plaster City Quarry to the Plaster City Plant. USG does not propose upgrades or improvements to the narrow-gauge railroad line.

The proposed Project consists of five main components: (1) expansion of the Plaster City Quarry (includes all the partially built and unbuilt Phases shown in Table 1); (2) construction of a new water well, Quarry Well No. 3, and pipeline to supply the Plaster City Quarry (see Figure 2); (3) reclamation activities at the Plaster City Quarry (includes all Phases); (replacement of an existing water pipeline from existing wells and storage tank to supply USG’s Plaster City Plant (associated with the Plaster City Plant); and (5) construction of a second new water pipeline (canal pipeline) from the Imperial Irrigation District’s (IID) Westside Main Canal to the Plaster City Plant to supplement the water supply (associated with the Plaster City Plant). The Project also contains a series of measures to avoid and minimize the effects of the proposed action on biological resources. The Project components are shown on Figure 1 in the biological assessment (BLM 2019a).

The following sections provide a summary of each of the Project components. A full description of each component can be found in the biological assessment (BLM 2019a).



Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

October 2019

Figure 2: Plaster City Quarry, Expansion Area and Phases

Plaster City Quarry Expansion

The Project consists of a multi-phased quarry plan that would systematically quarry and process approximately 1.92 million tons of gypsum annually over a period of approximately 73 years, plus 7 years to complete reclamation activities (see Figure 2). Mining and reclamation are divided into phases based upon quantity and quality of gypsum and projected market demand. The multi-phased plan includes opening new hillside quarries to remove outcrops of high-grade gypsum. The existing hillside quarry activity along the west-facing slope of the Fish Creek Mountains would be expanded to the south to access the subsurface gypsum deposits. Overburden (sand, gravel, and boulders) would be stripped to a depth of approximately 100 feet and used in reclamation. Quarrying and reclamation operations would take place simultaneously in phases throughout the life of the mine.

The existing disturbance consists of Phases 1A, 1B, the Shoveler Annex (Phases S1, S2, and S3), and processing facilities and access roads. The Project would authorize additional mining disturbance within Phases 2 through 9. All planned new disturbance, as well as quarry areas post-dating the California Surface Mining and Reclamation Act of 1975 (SMARA), are subject to SMARA’s reclamation requirements.

Plaster City Quarry expansion activities include site grading, quarrying, pre-milling (primary and secondary crushing and screening), and shipping material via the existing narrow-gauge railroad to the Plaster City Plant for processing. Initial Plaster City Quarry construction (grading) entails a heavy equipment pass over a previously unmined (undisturbed) surface, to remove vegetation and a top layer of alluvium or clay. It includes driving heavy equipment over the undisturbed area, pushing the vegetation and the top few inches of overburden into spoils stockpile areas. Typically, an operator can clear about five acres per day. Quarrying activities also include blasting, which occurs two to four times per month. Each blast results in the fragmentation of an average of 55,000 tons of gypsum. During the period 2015 through 2018, blasting, on average, occurred twice monthly. No modification or expansion of the existing pre-milling facility is proposed. Haul road alignments within the Plaster City Quarry would be changed to accommodate individual quarry phases and the railroad and access roads would continue to be maintained.

As indicated above, the USG mine expansion would take place over the course of about 80 years. USG is currently mining Phases 1A and 1B, and S1 and S2. Expansion into Phases 2, 2P, 3, 3P, as the initial mining activities, would last approximately 29 years. From there, the quarry would expand north and south into adjacent phases as gypsum is extracted and reclamation continues. Timing would be dependent on quantity and quality of recoverable gypsum, blending formulas, plant demand, overburden placement, and reclamation phasing. The logical progression of mining would be into Phase 4 to the north and Phase 6 to the south, then Phase 5 and Phase 7. Total mine life is approximately 73 years at maximum production (Table 2). The logical final phases would be Phases 9 to the south, Phase 10 to the north, and outcrop Phases 6BP and 7BP to the east, but these may vary as outcrop and alluvial deposits are depleted and blending scenarios dictate. Phases may be mined concurrently depending on gypsum quality (lilburn 2019, pers. comm.).

The train on the narrow-gauge railroad consists of up to 25 bottom dump hopper cars (45-ton capacity) and the train currently makes an average of 950 round trips between the Plaster City Quarry and the Plaster City Plant each year. With the proposed new production, the number of train trips could reach 1,800 round trips annually.

Construction of Plaster City Quarry Water Well and Pipeline

USG proposes to construct and operate a new production water well, Well No. 3 (Figure 2). The original water well was constructed in 1983 and is permitted under Imperial County Conditional Use Permit (CUP) No. 635-83 for a maximum withdrawal of 2,862 acre-feet per year. USG is proposing a replacement well be drilled on USG-owned land. This action was analyzed in the 2008 Final EIR/EIS and approved by Imperial County. A new underground pipeline would deliver water from Well No. 3 to the Plaster City Quarry, and a new electrical service line would provide electrical power to the pump. The power line and water pipeline would be located between the existing railroad alignment and the existing access road. The power line would be located underground from the well head to the Plaster City Quarry gate; within the quarry property it would be installed on either existing overhead power poles or on replacements of the existing poles, if needed. The total length of utility improvements from the well site to the Plaster City Quarry site would be approximately 18,240 linear feet.

Table 2: Projected Life (in Years) of Quarry Phases

Phase	Estimated Life (Years)	Phase	Estimated Life (Years)
1B	0	7BP	1.36
1A	9.72	6	7.39
2	7.68	S3	2.11
2P	0.1	7	8.22
3	4.47	8	11.25
3P North	0	8P	0.19
3P South	0.67	10	0.48
S1	3.9	9	4.44
S2	2.15	5	2.34
10P	1.64	4	1.71
6BP	2.7	**Total**	**72.52**

Plaster City Quarry Reclamation

Following the removal of gypsum, the areas disturbed by mining activities would be reclaimed as open space. Reclamation would be conducted concurrently, where feasible, during operations. Details of facilities decommissioning can be found in the 2019 Draft Supplemental EIS, Chapter 2 (Proposed Action and Alternatives). On completion of quarrying, the steepest portion of the hillside quarries would consist of maximum 1:1 slopes along a back-wall with a broad area excavated to approximately 100 feet deep at the base of the excavations and in the adjacent sparsely vegetated sandy wash (see Figure 2). The benched hillsides would be re-contoured by blasting or bulldozing the benches to soften the topography. Reclamation of the Plaster City Quarry phases would include the following activities:

- Backfilling and grading of phased quarries
- Stabilization of slopes
- Rehabilitation of pre-mining drainages
- Removal, disposal, or utilization of residual equipment, structures, and refuse
- Control and disposal of contaminants
- Treatment of streambeds to control erosion and sedimentation
- Revegetation of phased quarries

Reclamation efforts would follow a series of steps that would likely vary over the life of the mine operation. As new information or techniques become available that could improve the results of the revegetation activities, they would be integrated into revegetation practices. Thus far, revegetation efforts have taken a passive approach by re-contouring portions of quarried areas, allowing them to remain undisturbed, and monitoring the re-establishment of native vegetation. After approximately 5 years, natural vegetation has become established on the re-contoured slopes. USG has successfully re-vegetated 20 acres within Phase 1A using this approach (USG 2018).

Replacement of Existing Plaster City Plant Water Pipeline

The Project would replace the existing water line serving the Plaster City Plant with a new 10-inch line parallel to and within approximately twenty feet of the existing alignment. Water is supplied to the Plaster City Plant by private groundwater wells located approximately 8 miles west of the plant in the community of Ocotillo (Figure 1). The amount of groundwater pumped varies annually to meet plant processing demands; USG currently has the right to pump up to a maximum of 767 acre-feet per year. The groundwater is transmitted to the plant via an 8-inch gravity fed water pipeline, located along Imperial County Route S80 and within the existing road right-of-way.

Construction of New Canal Water Pipeline

The Project may include a new pipeline to deliver IID water from the Westside Main Canal to supplement the Plaster City Plant's water supply if this alternative is selected. The alignment is approximately 5.5 miles long and is proposed to be constructed within the right-of-way of the Union Pacific Rail Line and a minimum of 85 feet from the centerline of the tracks.

Conservation Measures (CM)

The Proposed Action includes a number of avoidance and minimization measures (conservation measures) to reduce adverse effects to natural resources. These include general biological resources conservation measures as well as measures specifically applicable to avoid and reduce adverse effects to Peninsular bighorn sheep.

CM 1. **Minimize Temporary Use Areas**. During construction of the Plaster City Quarry water pipeline, the need for temporary use areas will be minimized by using the USG private parcels on either end of the pipeline alignment for staging and equipment and material storage. Materials will be transported to the Project areas as needed, for immediate use.

CM 2. **Mining and Reclamation**. Mining and reclamation will be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation activities will be conducted concurrently with mining and will be initiated within each phase as soon as is feasible. Reclamation will include slope contouring and revegetation with native plant species as specified in the reclamation plan.

CM 3. **Domestic Animals**. The Project proponent will not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees will include instructions to report observations of domestic animals to the Quarry Manager. Upon receiving any such reports, the Quarry Manager will contact the appropriate authorities for removal of domestic animals.

CM 4. **Revegetation (Reclamation)**. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG will implement the revegetation plan. In general, revegetation will be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation will be concurrent with closure of individual phases. Wherever ongoing Plaster City Quarry operations may eliminate access to closed upper benches, those benches will be revegetated while access is still available. Due to the continually changing bench configuration and access within the working quarry, revegetation scheduling for each quarry bench will be based on the geotechnical safety of slopes and resources remaining of the gypsum deposit. Wherever possible, USG will begin revegetation of phases to restore native habitat values concurrently or in advance of opening new phases.

CM 5. **Integrated Weed Management Plan**. USG will prepare and implement an integrated weed management plan to control invasive weeds, including tamarisk and fountain grass, in cooperation with the BLM and Imperial County. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the Project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and Imperial County for review and approval prior to the start of construction and will be implemented for the life of the Project.

CM 6. **Mining and Construction Activity Monitoring and Reporting**. Prior to the beginning of any Plaster City Quarry expansion activities, USG will identify a

Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and Service. The Designated Biologist will be in direct contact with BLM and the Service. The Designated Biologist and Biological Monitors will have the authority and responsibility to halt any Project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

a. The Designated Biologist will notify BLM's Authorized Officer and the Service at least 14 calendar days before the initiation of Plaster City Quarry expansion of new ground-disturbing activities.

b. The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see CM 8 below) and will be on site during any Plaster City Quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils or stockpile areas) and will be responsible for ensuring that no expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see CM 11 below).

c. The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and the Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.

d. The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the Project to administer the Worker Education Awareness Program (CM 7) and ensure compliance with the conservation measures. The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the Project documenting the implementation of the following programs and plans, as well as compliance or non-compliance with each conservation measure:

   - Integrated Weed Management Plan
   - Worker Education Awareness Program
   - Reclamation Plan
   - Wildlife Mortality Reporting Program
   - Peninsular Bighorn Sheep Monitoring Plan

CM 7. **Worker Education Awareness Program**. Prior to Project approval, USG will develop a Worker Education Awareness Program (WEAP), to be implemented upon final approval by BLM and the Service. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the Project site throughout the life of the Project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all personnel. The WEAP will be approved by the BLM, Service, and CDFW, and will include the following:

a. Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female sheep.

b. The biology and status of special-status species of the area, including Peninsular bighorn sheep.

c. A summary of the avoidance and minimization measures and other conservation measures.

d. An explanation of the Peninsular bighorn sheep observation log (see CM 10), including instruction on correctly filling out data.

e. An explanation of the flagging or other marking that designates authorized work areas.

f. Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep, is encountered.

CM 8. **Wildlife Impact Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project.

a. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity. Speed limits along all access roads will not exceed 15 miles per hour.

b. Night lighting will be avoided or minimized by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.

c. The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.

d. Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).

e. No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight to prevent injury to Peninsular bighorn sheep. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Pitfalls will be covered completely to prevent access by small mammals or reptiles.

f. No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site Project facilities and activities, or in support of any other Project activities.

g. All trash and food-related waste will be placed in self-closing coyote-proof containers and removed regularly from the site to prevent overflow. Workers will not feed wildlife.

h. Water applied to dirt roads and construction areas for dust abatement will use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife such as coyotes and other sheep predators. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.

i. Any injured or dead wildlife encountered during Project-related activities will be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, including Peninsular bighorn sheep, the Designated Biologist or Biological Monitor will notify the BLM, Service, and/or CDFW, as appropriate, within 24 hours of the discovery.

CM 9. **Minimize Impact to Designated Critical Habitat**. To minimize impacts to Peninsular bighorn sheep designated critical habitat, USG will conduct 1:1 onsite reclamation as specified in the Mining and Reclamation Plan for all Project disturbance areas. Additionally, USG will acquire critical habitat for long-term wildlife habitat conservation to minimize the loss of 14.6 acres of designated critical habitat on public lands within the Plaster City Quarry. USG would provide 29.2 acres of compensation habitat. This compensation land is currently under private USG ownership and would be permanently protected as Peninsular bighorn sheep habitat through a conservation easement or similar instrument, to be developed in coordination with BLM. Any lands proposed for acquisition to minimize the loss of critical habitat will be subject to review and approval by the BLM, CDFW, and the Service.

CM 10. **Peninsular Bighorn Sheep Monitoring and Reporting**. USG will record and report all onsite Peninsular bighorn sheep observations to BLM, CDFW, and the Service and will support the CDFW Peninsular bighorn sheep monitoring and reporting program within the Fish Creek Mountains and Vallecito Mountains. USG will continue implementing a reporting form (observation log) for all Peninsular bighorn sheep observations, including completing data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation to the Quarry Manager. In addition, USG will fund the purchase of radio collars and the capture of 10 Peninsular bighorn sheep in the Fish Creek Mountains and Vallecito Mountains ewe group areas, to provide location monitoring data within these ewe groups over a 10-year period. The funding amount will be $157,115 (per cost estimate provided by CDFW), to be transferred to the CDFW program via a means agreed upon by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek Mountains and Vallecito Mountains ewe groups, and all resulting data will be available to BLM to support the long-term analysis of Peninsular bighorn sheep activities in the Federal action area.

CM 11. **Peninsular Bighorn Sheep Avoidance and Minimization Measures**. USG will implement the following measures throughout the life of the Project:

a. New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through June 30) as defined in the Peninsular bighorn sheep recovery plan, except with prior approval by the Service and CDFW.

b. Blasting will be minimized during the lambing season (January 1 through June 30) within the Plaster City Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.

c. The Designated Biologist or Biological Monitor will be on site during any quarry expansion activities or other new ground disturbing activities, and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if Peninsular bighorn sheep are within a 0.25-mile radius of the activity.

d. If a Peninsular bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Plaster City Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify the BLM, CDFW, and the Service.

e. Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 8 feet tall. Any proposed permanent fencing design will be submitted for BLM, CDFW, and the Service review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.

f. When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).

g. Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

h. In consultation with BLM, CDFW, and the Service, USG may construct and maintain a supplemental water source to ensure water availability to Peninsular bighorn sheep in the Fish Creek Mountains ewe group during summer drought.

CM 12. **Future Plaster City Quarry Phasing Notification and Review.** USG will notify the BLM, CDFW, and the Service 90 days prior to initiating future mining activities in the four phases nearest to the highest Peninsular bighorn sheep occurrence and habitat connectivity areas (i.e., Phases 6BP, 7BP, 8, and 9). Upon notification, the agencies will coordinate with USG to review Peninsular bighorn sheep occurrence and activity in the vicinity obtained during the intervening years. Peninsular bighorn sheep avoidance and minimization measures may be revised as needed to conform to new information.

Action Area

The implementing regulations to section 7(a)(2) of the Act describe the action area as all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR §402.02). Analyses of the environmental baseline, effects of the action on the species and designated critical habitat, cumulative effects, and the impacts of the incidental taking, are based upon the action area as determined by the Service (Service and NMFS 1998).

The action area for the Project includes all suitable Peninsular bighorn sheep habitat within the Vallecito Mountains/Fish Creek Mountains recovery region (recovery region 8; 173,978 acres), which includes the quarry expansion area and the new water well and pipeline alignment (Figure 3). We have identified the recovery region as the action area because ewe groups within recovery regions are connected via ram movements and rarer dispersal by ewes; therefore, the Peninsular bighorn sheep population is comprised of a metapopulation structure (Service 2000). Effects to one ewe group in a recovery region will have consequences to other ewe groups within that same recovery region.

ANALYTICAL FRAMEWORK FOR THE SECTION 7(A)(2) DETERMINATIONS

Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the Effects of the Action, which are all consequences to listed species caused by the proposed action that are reasonably certain to occur; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the species.

As such, in accordance with policy and regulation, the jeopardy determination is made by evaluating the aforementioned components to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild by reducing the reproduction, numbers, and distribution.

Adverse Modification Determination

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat of listed species. “Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species” (50 CFR 402.02).

In accordance with policy and regulation, the adverse modification analysis in this biological opinion relies on four components: (1) the status of critical habitat, which describes the rangewide condition of designated critical habitat for the Peninsular bighorn sheep in terms of its physical and biological features, the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the environmental baseline, which analyzes the condition of the designated critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the effects of the action, which analyze all consequences to critical habitat caused by the proposed action that are reasonably certain to occur and their influence on the recovery role of the affected designated critical habitat units; and (4) cumulative effects, which evaluates the effects of future non-Federal activities in the action area on the physical and biological features of critical habitat and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the designated critical habitat of the Peninsular bighorn sheep are evaluated in the context of the rangewide condition of the critical habitat, taking into account any cumulative effects, to determine if the consequences of the proposed action are likely to appreciably reduce the value of critical habitat for the conservation of the species.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The following discussion briefly summarizes information about Peninsular bighorn sheep relative to its legal status and biology, as discussed in the Service's (1) 5-year review for the species (Service 2011a); (2) recovery plan (Service 2000); and (3) revised designated critical habitat (Service 2009a). Please refer to these documents for more detailed information.

The Service listed the Peninsular bighorn sheep as a distinct population segment (DPS) of the species *Ovis canadensis* on March 18, 1998 (63 FR 13134). The Service revised this listing on April 14, 2009, to identify the listed unit as an endangered DPS of the subspecies (*Ovis canadensis nelsoni*) (74 FR 17288).

Reproduction

Peninsular bighorn sheep reproduction begins during the rut when adult bighorn sheep, who tend to loosely segregate during much of the year, intermingle from August through October (Rubin *et al.* 2000). Gestation time is approximately 174 days (Shackleton *et al*. 1984) and lambs are born between January and August; however, most lambs are born between February and April. Failure to acquire sufficient nutrients during the last 2 months of gestation (typically December and January) and during nursing can adversely affect the survival of newborns (Thorne *et al.* 1976, Holl *et al.* 1979), and the time period surrounding lambing and nursing is very demanding in terms of the energy and protein required by ewes. Therefore, access to food resources with sufficient nutrients can influence reproductive success (Etchberger and Krausman 1999).

In the Peninsular Ranges, ewes estimated to be between 2 and 16 years of age have been documented to produce lambs (Rubin *et at.* 2000; Ostermann *et al*. 2001). As parturition (the act of giving birth) approaches, ewes seek isolated sites with shelter and unobstructed views (Turner and Hansen 1980), and seclude themselves from other females while finding sites to give birth (lambing sites). When ewes are ready to give birth, they will typically seek out the steepest terrain, where they and their lambs will be safest (Geist 1971). Lamb and yearling age classes experience higher mortality rates relative to adult bighorn sheep. After reaching adulthood at 2 years of age, Peninsular bighorn sheep survival rate is high, generally above 70 percent (Service 2000).

Numbers

In 1974, the Peninsular bighorn sheep population was estimated at 1,171 (Weaver 1975), but by 1996 the rangewide population estimate had declined to 276 adult sheep (Service 2000); since that time the population has steadily increased. Currently, the population is considered stable with an estimated 884 adult bighorn sheep in the Peninsular Ranges (Colby and Botta 2017). In 2016, the rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions. Criteria for downlisting Peninsular bighorn sheep from endangered to threatened include, among other things, the occurrence of at least 25 ewes in each recovery region. No rangewide population surveys have been conducted since 2016 so current rangewide population numbers are not available.

Distribution

Within the United States, the range of Peninsular bighorn sheep extends along the Peninsular Ranges from the San Jacinto Mountains in Riverside County, California, south to the U.S.-Mexico border in Imperial County, California. Peninsular bighorn sheep habitat in the Peninsular Ranges is restricted to the east facing, lower elevation slopes that are typically below 4,600 feet and located along the northwestern edge of the Colorado Division of the Sonoran Desert, commonly referred to as the Colorado Desert. Peninsular bighorn sheep regularly use steep, open slopes and ridgelines that offer unobstructed views of wide areas within these mountain ranges. These types of terrain are a crucial component of Peninsular bighorn sheep habitat as it is used for escape from predators (escape terrain), lambing areas, and shelter in both excessive heat and severe storms (Service 2000, Bleich *et al*. 2009).

Designated Critical Habitat

The Service designated approximately 844,897 acres of critical habitat on February 1, 2001 (66 FR 8650) based largely on information from the Peninsular bighorn sheep recovery plan (Service 2000). Following a challenge in court and a review of the best scientific information available at the time, the Service re-designated approximately 376,938 acres of revised designated critical habitat on April 14, 2009 (74 FR 17288).

The Peninsular bighorn sheep revised designated critical habitat rule identifies physical and biological features that are essential to the conservation of the species. As identified in the final revised critical habitat rule (74 FR 17288), the physical and biological features are:

1. Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less below 4,600 feet elevation in the Peninsular Ranges that provide space for breeding, feeding, and sheltering and movement within and between ewe groups.
2. Valley floors, foothills, and alluvial fans and washes with productive soils that support a variety of forage plants to meet the annual and drought-related variations in forage quality and availability.
3. Steep, rugged slopes (60 percent slope or greater) below 4,600 feet elevation that provide secluded space for lambing as well as terrain for predator evasion.
4. Alluvial fans and washes that maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas, such as foraging areas.
5. Intermittent and permanent water sources within the Peninsular Ranges.

Since 2009, there have been temporary disturbances to approximately 12,000 acres of designated critical habitat consisting of transmission line construction and wildland fires (Service 2009b, Service 2019). This is approximately 3 percent of the area under designated critical habitat. We do not have information to indicate that these disturbances are adversely affecting the physical and biological features that are essential to the conservation of the species. Also, a majority of the lands under the critical habitat designation are included in Federal or State lands with conservation mandates such as the Santa Rosa and San Jacinto Mountains National Monument and Anza Borrego Desert State Park. In addition, the Peninsular bighorn sheep is a species covered by the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), which includes designated critical habitat within its Santa Rosa and San Jacinto Mountains Conservation Area. Lastly, based on land use information contained in California's Farmland Mapping and Monitoring Program (FMMP 2016), there has been no significant changes in land use from open space to urban uses between 2010 and 2016 in areas of designated critical habitat.

Recovery

There are nine recovery regions identified within the Peninsular Ranges, including: (1) San Jacinto Mountains, (2) Northern Santa Rosa Mountains, (3) Central Santa Rosa Mountains, (4) Southern Santa Rosa Mountains, (5) Coyote Canyon, (6) Northern San Ysidro Mountains, (7) Southern San Ysidro Mountains, (8) Vallecito Mountains/Fish Creek Mountains, and (9) Carrizo Canyon (Service 2000). The recovery strategy for Peninsular bighorn sheep, as outlined in the recovery plan (Service 2000), included three delisting criteria:

1. At least 25 ewes must be present in each of the nine regions described in the recovery plan, during each of 12 consecutive years, without continued population augmentation.
2. The rangewide population must average 750 individuals (adults and yearlings) with a stable or increasing population trend over 12 consecutive years.
3. Regulatory mechanisms and land management commitments have been established that provide for long-term protection of Peninsular bighorn sheep and all suitable habitat. In addition, connectivity among all portions of habitat must be established and assured through land management commitments such that bighorn sheep are able to move freely throughout the Peninsular Ranges

Challenges to the recovery of Peninsular bighorn sheep within these regions were identified as habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Since the time of listing, threats from habitat loss in the Northern Peninsular Ranges (Recovery Regions 1, 2, 3, and 4) have declined due to the CVMSHCP, a large regional conservation plan that facilitates the purchase and conservation of suitable habitat within these recovery regions (Service 2011a).

Although not identified as threats at listing, invasive nonnative plants, fire suppression, and catastrophic fire impact Peninsular bighorn sheep habitat rangewide (Service 2011a). Impacts of both fire suppression at the higher elevations and more frequent wildfires at lower elevations (due to nonnative plant cover) have increased the magnitude of this threat throughout the range since listing (Service 2011a). It is unknown whether fire caused any mortality of Peninsular bighorn sheep, but large wildfires may threaten individuals in the future. However, Peninsular bighorn sheep have been documented foraging in burned areas at high elevation, suggesting a potential, if transient, benefit (Service 2011a). Lastly, changes in climate, including higher temperatures, drought, and longer time intervals between heavy rainfall events, affect the amount of water available to Peninsular bighorn sheep rangewide, and pose challenges to recovery (Service 2011a).

Since listing, Peninsular bighorn sheep population growth has increased significantly in all recovery regions, with the exception of the San Jacinto Mountains. As stated above, the 2016 rangewide ewe population estimate was 552 with more than 25 ewes in each of the 9 recovery regions, which meets one of the criteria for downlisting the species. While the number of adults in most all of the recovery regions continues to improve, low lamb recruitment continues to be documented in several recovery regions (Colby and Botta 2018).

ENVIRONMENTAL BASELINE

Revised regulations implementing the Act (50 CFR § 402.02) define the environmental baseline as the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action (Project). The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

The action area occurs at the west margin of the Salton Basin in Imperial and San Diego Counties within the Peninsular Ranges. Summer temperatures are hot, generally above 100 degrees Fahrenheit. Total annual precipitation averages about 5 inches per year, with most precipitation falling in the winter months, but some precipitation also occurs in the summer months during irregular summer thunderstorms. USG's existing quarry and quarry expansion area is located in a broad alluvial fan canyon at the base of the Fish Creek Mountains to the east and Split Mountain (part of the larger Vallecito Mountain chain) to the west. The Project is bounded by the Anza Borrego Desert State Park on the west and northwest, and the Fish Creek Mountains Wilderness Area on the east and south within public lands administered by the BLM (Figure 1). Existing approvals authorize mining activities on 464 acres (all on private lands), of which approximately 431 of these authorized acres have been disturbed by previous and ongoing mining activities and approximately 20 of these acres have been restored. Under the proposed action, new mining would occur on a total of approximately 709.7 acres, 608.2 of which are Peninsular bighorn sheep designated critical habitat (Table 1).

Past Consultations within the Action Area

The Service issued a programmatic biological opinion evaluating the effects of the California Desert Conservation Area Plan, as amended, on Peninsular Bighorn Sheep, Riverside and Imperial Counties, California (Service 2010). The Service found the BLM's plan guidance was not likely to jeopardize the continued existence of Peninsular bighorn sheep or adversely modify designated critical habitat. Our 2010 programmatic biological opinion concluded that effects to Peninsular bighorn sheep related to the USG mine expansion was the subject of an ongoing section 7 consultation and effects of the mine expansion were not analyzed in that biological opinion.

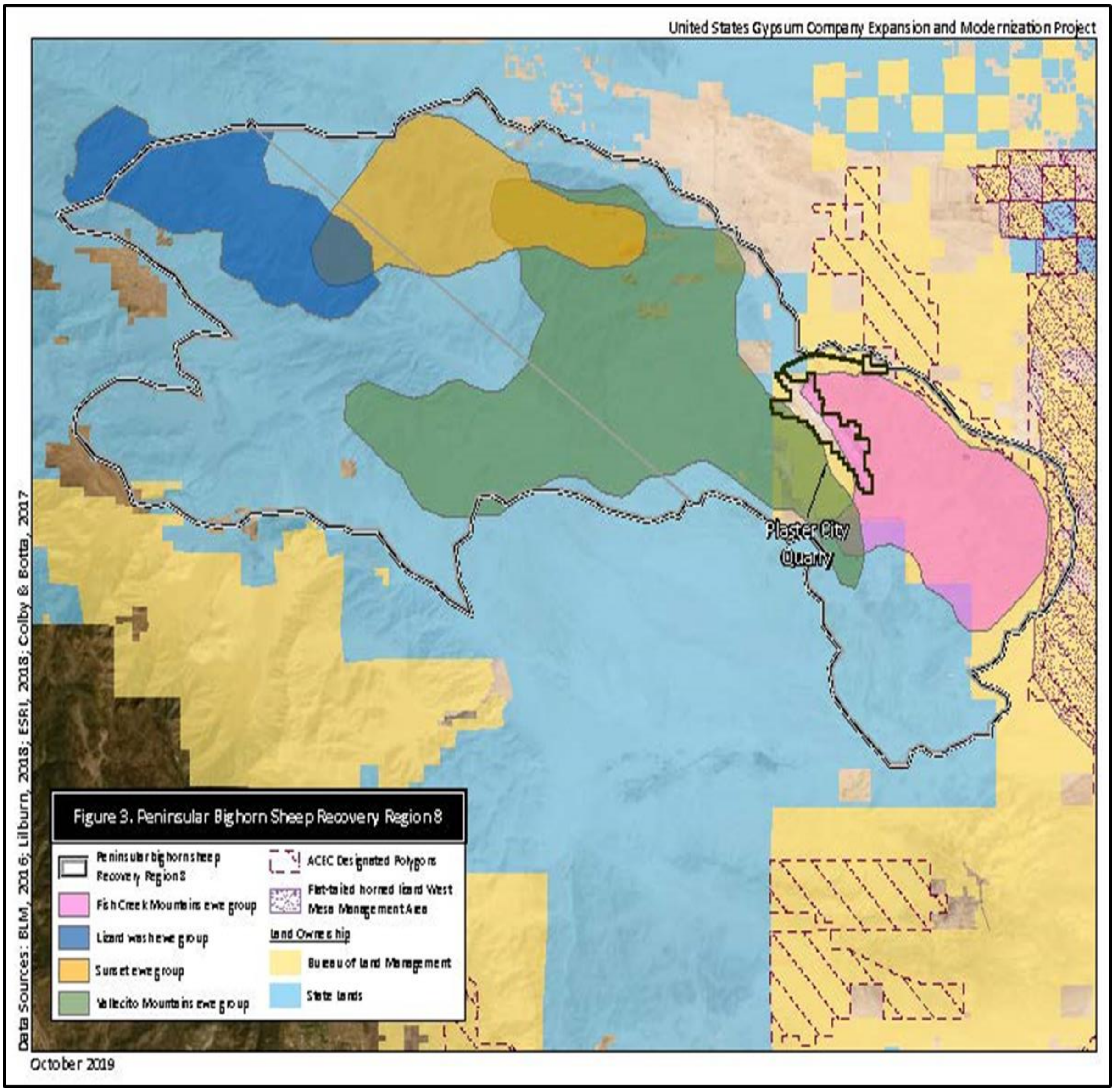
Status of the Species in the Action Area

The action area encompasses the Peninsular bighorn sheep Vallecito Mountains/Fish Creek Mountains recovery region, which contains about 173,978 acres of Peninsular bighorn sheep habitat. This recovery region supports the Lizard Wash, Sunset, Vallecito Mountains, and Fish Creek Mountains ewe groups (Colby and Botta 2017), as shown below in Figure 3. Over a 5-year period from 2012-2016, the Peninsular bighorn sheep ewe survival rate in this recovery region was very high, above 90 percent (Colby and Botta 2017). During the 2017-2018 reporting period, there were six documented radio-collared sheep mortalities (five ewes, one ram) in the recovery region, all of which were likely due to mountain lion predation (Colby and Botta 2018). Lamb survival and recruitment are not documented in this recovery region (Colby and Botta 2017).

The estimated population abundance of Peninsular bighorn sheep in this recovery region increased during the period from 1998 to 2016. The region had an estimated population of 45 animals in 1998 and an estimated population of 163 animals (ewes, rams, and yearlings) in 2016 (Colby and Botta 2017). Current population estimates for the recovery region are not available, but we have no information to indicate any reasons for a significant drop in population numbers. To date, past mining activities do not appear to have had an adverse effect on numbers of Peninsular bighorn sheep in the recovery region.

The CDFW radio-collar location data in the action area indicate there are two ewe groups, Vallecito Mountains and Fish Creek Mountains that use the mountain slopes and foothills surrounding the Plaster City Quarry and will occasionally use alluvial fans in the canyon areas south of the actively mined areas (Figure 4). Ewes with lambs have been reported within about one mile of the active mining areas. Rams have also been documented on the Project site. Based on the observation log records maintained by USG since 2008, there have been six Peninsular bighorn sheep seen within the active mining areas (White 2019, pers. comm.). Recent Peninsular bighorn sheep sightings include one ewe on September 9, 2019, and one ram on October 21, 2019; neither animal was injured and both were allowed to wander off the mining area of their own accord (Massar 2019, pers. comm.).

The distribution of Peninsular bighorn sheep in the recovery region has not changed significantly since active monitoring began in 1992 (Colby and Botta 2018) and the available acres that support resource needs have not significantly declined since most of the habitat is within areas protected from development (see Recovery section below). Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. There are only a few known water sources within the Vallecito Mountains/Fish Creek Mountains recovery region, all of which are small, water-filled depressions in rocks, referred to as a tinajas. Based on the biological assessment (BLM 2019a), as of 2017, numerous tinajas in the Fish Creek Mountains have been dry for the past few years (prior to above-average rainfall in 2019).



Data Sources: BLM, 2016; Lilburn, 2018; ESRI, 2018; Colby & Botta, 2017

October 2019

Figure 3. USG Mine Expansion and Modernization Project.

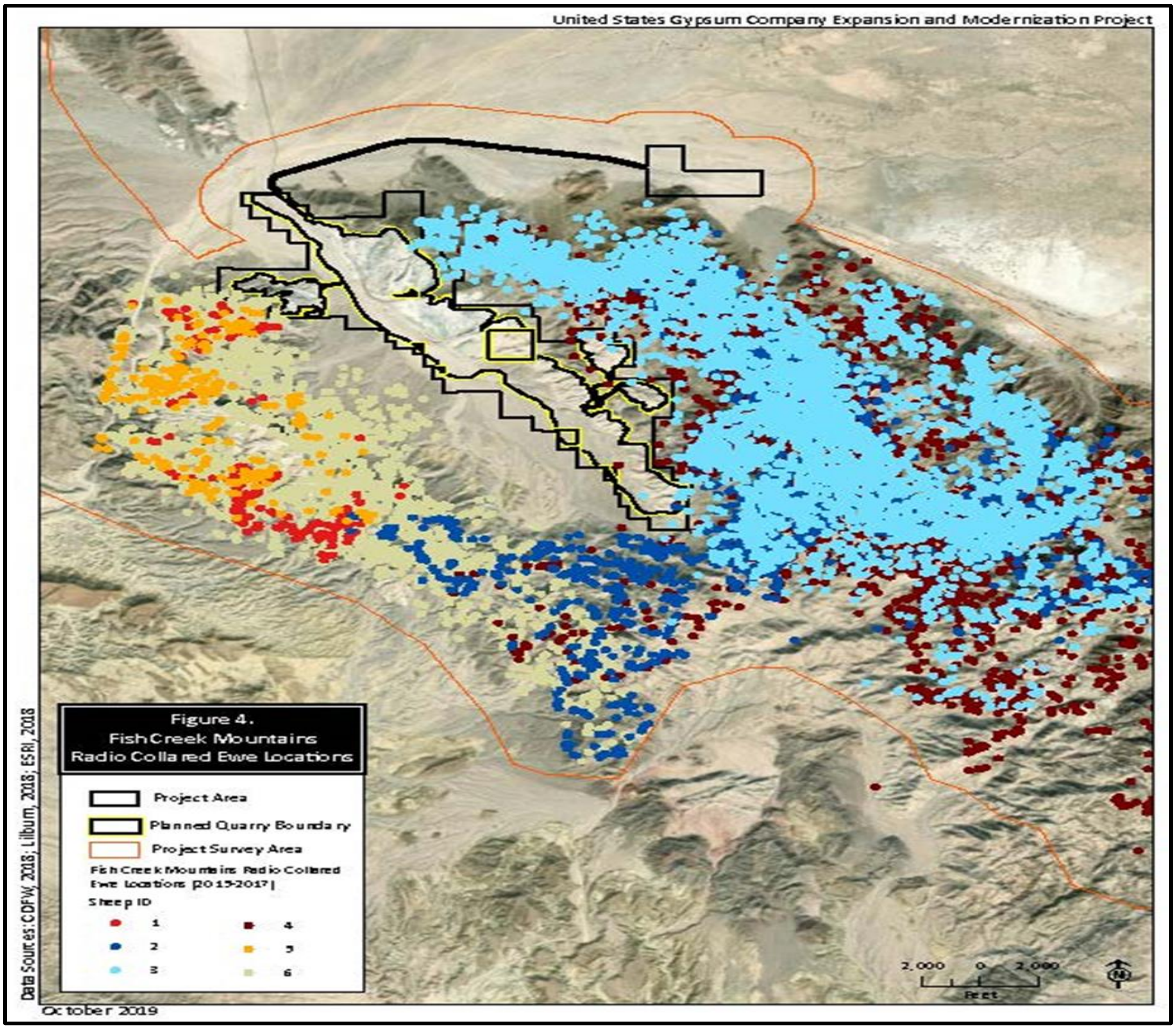


Figure 4. Radio-collared Peninsular Bighorn Sheep Locations 2015-2017

Status of Designated Critical Habitat in the Action Area

The action area is within unit 2B, the Southern Santa Rosa Mountains south to Vallecito Mountains, of Peninsular bighorn sheep designated critical habitat. This unit includes about 248,021 acres of habitat that support the physical and biological features essential to the conservation of Peninsular bighorn sheep. The action area includes about 97,077 acres of designated critical habitat. The final Peninsular bighorn sheep critical habitat rule excluded most of the existing USG mine areas from the critical habitat designation because active mining pits do not generally provide suitable habitat or suitable conditions for the Peninsular bighorn sheep (Service 2009a). However, 608.2 acres of designated critical habitat are within the planned quarry expansion area. This represents about 0.63 percent of the critical habitat within the action area and a negligible percentage of the entire designated critical habitat rangewide. Designated critical habitat in the action area contains moderate to steep rugged slopes, foothills, water sources, and alluvial fans and washes, which are the physical and biological features essential to the conservation of the species. There have been no disturbances due to wildland fires or urban development in the action area since the 2009 designation that would degrade or eliminate these physical and biological features. In addition, a majority of the acres within designated critical habitat are protected from development (see below). The undisturbed alluvial fans, washes, and foothills located in the Project's quarry expansion areas provide a high diversity of food plants that support the physical and biological features needed to meet the annual and drought-related variations in forage quality and availability and areas to maintain habitat connectivity (Service 2009a). Based on radio-collared individuals, Peninsular bighorn sheep most frequently use the habitat areas associated with the steep slopes and ridges, rather than the alluvial fans in the canyon. However, washes and alluvial fans play an important role in providing Peninsular bighorn sheep quality forage during the heat of summer months and through times of drought (Service 2009a).

Recovery

As stated above, challenges to Peninsular bighorn sheep recovery include habitat fragmentation, degradation, and loss due to urban and commercial development; disease; predation coinciding with low population numbers; response to human disturbance; insufficient lamb recruitment; and prolonged drought. Based on information in CDFW's most current Peninsular bighorn sheep monitoring report, habitat loss and lack of water sources are impediments to recovery in the Vallecito Mountains/Fish Creek Mountains recovery region (Colby and Botta 2018). The Fish Creek Mountains ewe group is more vulnerable to human disturbance since it resides adjacent to the Project's expansion areas to the west, and off-road vehicle use and target shooting on BLM lands to the east (Colby and Botta 2018). However, about 93 percent of the lands within the recovery region are protected from development since they are either within the Anza Borrego Desert State Park (ABDSP) or BLM wilderness areas (Table 3). Therefore, it is unlikely the recovery region is vulnerable to habitat fragmentation and loss due to urban and commercial development.

Table 3. Land Management Designations – Recovery region 8

Land Management	Acres
Anza Borrego Desert State Park	142,273
BLM Wilderness Area	18,969
BLM	5,947
Private	5,367
California State Lands Commission	1,154
San Felipe Valley Wildlife Area	266
Vallecito County Park and Stage Station, San Diego County	21
Total	**173,998**

For over 30 years, staff from ABDSP has maintained numerous guzzlers within the Vallecito Mountains and sheep have become dependent upon their use. Due to drought conditions, there has been insufficient rain to fill most of the guzzlers. Currently, ABDSP and CDFW are working together to develop a long-term maintenance plan for guzzlers and access to water sources throughout ABDSP to assure year-round water availability. A few recovery actions identified in the recovery plan have been implemented in the Vallecito Mountains/Fish Creek Mountains recovery region, including providing and maintaining water sources, and securing funds and methods to monitor ewe groups.

In 2016, the estimated number of ewes in the Vallecito Mountains/Fish Creek Mountains recovery region was 101 ± 28 (Colby and Botta 2017), which exceeds one of the recovery criteria for 25 ewes necessary for downlisting. Therefore, as of the 2016 count, this recovery unit is exceeding that recovery goal. As explained in the Peninsular bighorn sheep recovery plan, these ewe groups are considered subpopulations in a metapopulation context; thus their recovery and persistence depend upon maintaining habitat connections between the ewe groups. Based on radio-collared sheep location data, Peninsular bighorn sheep are currently moving among ewe groups in the recovery region and will occasionally move to adjacent recovery regions (Colby and Botta 2018) so habitat connections appear to be suitable for movement. Wildland fires have burned about 3,464 acres or about 2 percent of the habitat within the recovery region. Long-term drought, mountain lion predation, and disease episodes are the natural factors most likely to affect the population numbers in the future.

EFFECTS OF THE ACTION

Revised regulations implementing the Act (50 CFR § 402.02) define the effects of the action as all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (see § 402.17).

The replacement of the existing Plaster City Plant water pipeline and canal pipeline components of the Project are not expected to have adverse effects on Peninsular bighorn sheep because they would not be located in or near occupied Peninsular bighorn sheep habitat or designated critical habitat. Therefore, only the Plaster City Quarry expansion, Well No. 3 and water pipeline construction, and reclamation components of the Project are evaluated in this section.

Effects to the Species

Quarry Expansion and Operation

As mentioned in the Environmental Baseline section above, the mountains surrounding the Plaster City Quarry support four ewe groups. The number of ewes within each of these groups is unknown but the action area supported about 163 animals in 2016, about 101 of which were ewes (Colby and Botta 2017). Of these four ewe groups, the Vallecito Mountains and Fish Creek Mountains ewe groups use the mountains and foothills adjacent to the USG quarry. As such, the ewes and rams within these groups will be exposed to the activity and noise associated with the Project. These activities include site grading, quarrying, pre-milling (primary and secondary crushing and screening), reclamation, well and water pipeline construction, and transporting material via the existing narrow-gauge railroad to the Plaster City Plant for finish processing. Expansion and operation could adversely affect the Peninsular bighorn sheep that occupy these hillsides by (1) loss of suitable habitat due to vegetation removal and heavy grading, and behavioral avoidance of the mine site and adjacent habitat; (2) disrupting reproduction or lambing activities; and (3) limiting movement among ewe groups. The two ewe groups, Fish Creek Mountains and Vallecito Mountains, occurring in the mountains adjacent to the mine would be most affected by expansion activities. Direct individual injury or fatality from active mining activities is not expected to occur, for reasons explained below.

The Project would result in the loss of 608.2 acres of suitable habitat over the course of 80 years (Table 1). The loss of habitat would be incremental over that time and quarrying and reclamation activities would take place simultaneously in phases throughout the life of the mine. In general, expansion activities would proceed from currently active quarry areas in the north part of the Project site to future quarry areas (phases) in the south. Because the Project would be implemented in phases, not all 608.2 acres would be unavailable to Peninsular bighorn sheep at the same time. Since the expansion phases are located in the alluvial canyon, loss of habitat would generally result in the elimination of habitat used for foraging. Loss of forage habitat would be minimized by limiting habitat disturbance (CM 1), restoring mined sites (CM 2), and acquiring lands for long-term habitat conservation in the action area (CM 9).

Human presence, lighting, dust, blasting, and noise and vibrations from construction and heavy equipment may alter Peninsular bighorn sheep behavior in the mine vicinity. Based on a site specific noise study, as the mine expands south, noise levels will increase from faint to moderately loud, with loud to very loud level short-duration noise, such as blasting (Urban Crossroads 2018). A number of studies have been conducted to evaluate bighorn sheep responses to human activities and the general conclusion is that bighorn sheep increase their distance away from humans, especially when they are approached by people and dogs. There is evidence that under some circumstances bighorn sheep may habituate to predictable human activity through learning in response to predictable, localized, and avoidable disturbance, including highway traffic, hiking, and aircraft (Service 2000, 2011a). However, even in otherwise optimal habitat, sheep are known to abandon areas either temporarily or permanently, when the limit of their tolerance to disturbance is exceeded (Service 2000, 2011a). Based on radio-collar location data, Peninsular bighorn ewes currently use the hillsides directly above actively mined sites (Figure 4). Furthermore, studies conducted looking specifically at mining effects on other Nelson’s bighorn sheep populations indicate that sheep acclimate to ongoing mining activities (Oehler *et al*. 2005, Jansen *et al*. 2007, Bleich *et al*. 2009). Based on these studies, an increase in noise activity may cause Peninsular bighorn sheep to temporarily avoid habitat adjacent to the mine they currently use as escape terrain, foraging, or movement among local ewe groups. However, we anticipate they will also acclimate to future noise and activity over time and will not abandon the hillsides adjacent to future mining activities.

As mentioned in the Environmental Baseline Section above, Peninsular bighorn sheep occupy the Fish Creek Mountains year-round so it is also likely that lambing activity (i.e., birth and nursing) occurs in the Fish Creek Mountains and Vallecito Mountains surrounding the mine site.

Ewes are particularly sensitive to disturbance during the lambing season. The CDFW recommends buffer distances between 400- to 600-yards to avoid disturbance to ewes during lambing activity (Service 2011b). Within the Fish Creek Mountains, location data from radio-collared sheep suggest the most likely lambing activity areas are located in the north-south trending canyon east of the quarry (see Figure 7 in the biological assessment). Future quarry phases 6BP, 7BP, 8, and 9 are nearest to, and are within 600 yards of, this lambing habitat, so the human disturbance and noise associated with mining activity could disrupt reproduction. However, to avoid and/or minimize adverse effects to reproduction or lambing activities, new ground-disturbing activities (i.e., initial quarry development) and blasting would not take place during lambing season (January 1– June 30), except with the approval of the Service and CDFW (CM 11). Also, no ground disturbing activities will be conducted while Peninsular bighorn sheep are within a 0.25-mile radius (440 yards) of the activity (CM 8).

Of the 608.2 acres affected by Project activities, about 368 acres include alluvial fan habitat (see Table 3 in the biological assessment) that sustains forage plant resources with sufficient nutrients to support successful reproduction. Loss of these food resources could adversely affect future reproduction success. However, this loss will occur over the course of 80 years, so not all the acres supporting forage resources will be unavailable simultaneously. Also, about 287 acres of alluvial fan habitat will remain in the canyon. Lastly, based on radio-collared location data, sheep activity is confined to the steep slopes and ridges, rather than in the canyon, so ewes in the action area likely forage outside of the canyon and closer to escape terrain.

Based on Peninsular bighorn sheep radio-collar data, at least six ewes use the mountains, foothills, and alluvial fans surrounding the USG mine. Truck and train traffic and blasting have occurred on the site since 1921, with continuous operation since 1945 and no Peninsular bighorn sheep deaths have been reported due to mining activities. Given the apparent avoidance of active quarry areas by Peninsular bighorn sheep (see Figure 4), the probability of injury or death as the mine is expanded is unlikely. In addition, USG has an active monitoring program (observation log) that entails shutting down operations once a Peninsular bighorn sheep is seen near mining activities. The animals are then monitored until they are out of harm’s way. The Project includes conservation measures that will continue this active monitoring program (CM 10 and CM 11).

Expanding quarry operations would likely inhibit sheep from crossing the active quarry areas. Future mining in the southern end of the quarry expansion (Phases 8 and 9) is adjacent to habitat that currently facilitates movement and connectivity between ewe groups on either side of the canyon. Therefore, once construction starts in those phases, connectivity among ewe groups could be compromised. Based on radio-collar location data, Peninsular bighorn sheep regularly use habitat immediately adjacent to the active quarrying Phases 1A, 1B, S1, S2, and S3 (Figure 4). Based on these activity patterns, Peninsular bighorn sheep are expected to continue to occupy the foothills south of Phases 8 and 9 and movement between ewe groups would continue along those areas. Quarry areas undergoing restoration would also be accessible to Peninsular bighorn sheep, although their localized behavioral response to the disturbance involved with previously active quarry areas is unknown. However, as mentioned above, studies evaluating sheep response to mining activities in other parts of Nelson’s bighorn sheep range indicate that mining activities have a minor influence on distribution. Therefore, we anticipate insignificant effects on movement and connectivity with implementation of the Project.

To summarize, loss of suitable habitat, disruption of reproduction or lambing activities, and limiting movement will be minimized, offset, or reduced over time primarily through implementation of the Project's conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). Implementation of these measures, the gradually phased nature of the Project, and the ability of Peninsular bighorn sheep to acclimate to human activity would help to ensure that mine expansion does not lead to an appreciable (measureable) reduction in reproduction, numbers, and distribution of Peninsular bighorn sheep.

Reclamation (Restoration)

Reclamation activities would entail re-contouring hillsides post-mining and would be conducted by blasting or bulldozing the benches created by mining to soften the topography. Effects to Peninsular bighorn sheep would be similar to those for mine expansion activities with increased human presence, lighting, dust, blasting, and noise and vibrations from heavy equipment. Noise or disturbance effects may cause Peninsular bighorn sheep to avoid habitat they currently use as escape terrain, foraging, or movement among local ewe groups. However, the restoration activities will result in reclaiming disturbed areas that will eventually support habitat for Peninsular bighorn sheep, mainly forage resources. Additionally, Project conservation measures will minimize potential adverse effects by minimizing habitat disturbance (CM 1), training workers to avoid adverse effects to Peninsular bighorn sheep (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and future notification of new quarry activities in active Peninsular bighorn sheep use areas (CM 12).

Based on the gradually phased nature of the project, the ability of Peninsular bighorn sheep to acclimate to human activity, and implementation of the conservation measures, the adverse effects to Peninsular bighorn sheep associated with the reclamation activities will be avoided and/or minimized. Therefore, reclamation activities are not likely to appreciably reduce the reproduction, numbers, and distribution of Peninsular bighorn sheep in the action area.

Effects to Critical Habitat

Mining activities will result in loss of 608.2 acres of designated critical habitat in Unit 2B. Unit 2B is 248,021 acres in size, of which 97,077 acres occurs in the action area. Loss of these 608.2 acres of critical habitat represents 0.63 percent of the critical habitat in the action area, 0.25 percent of the critical habitat in Unit 2B, and 0.16 percent of the total amount of critical habitat rangewide. Habitat lost through Project activities will no longer provide suitable habitat or suitable conditions for the Peninsular bighorn sheep until they are restored. Also, the almost constant presence of workers and machinery may reduce or prevent Peninsular bighorn sheep from using the active mine site for many years, thus rendering 608.2 acres of designated critical habitat unavailable to Peninsular bighorn sheep. As mentioned above, Peninsular bighorn sheep designated critical habitat in the action area provides space for breeding, feeding, and sheltering and movement among ewe groups. The mine expansion will eliminate alluvial fans and wash areas with productive soils that support annual forage areas and maintain habitat connectivity. However, based on radio-collared sheep movement, a majority of the Peninsular bighorn sheep use area is along the foothills and higher up the slopes, with occasional forays into the alluvial fans and wash areas.

Adverse effects to designated critical habitat impacts would also be minimized, offset, or reduced over time primarily through implementation of the conservation measures. These measures include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), training workers to avoid adverse effects (CM 7), implementing avoidance buffers (CM 8), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The Project applicant will also conserve lands to minimize the loss of designated critical habitat on public lands within the Plaster City Quarry (CM 9) and conduct 1:1 onsite reclamation (restoration) for all Project disturbance areas. Based on implementation of the conservation measures and the small loss of designated critical habitat, the action area will retain the physical and biological features essential to the conservation of Peninsular bighorn sheep and the Project will not appreciably diminish the value of critical habitat as a whole for the conservation of Peninsular bighorn sheep.

Effects to Recovery

As described in the Environmental Baseline section, the number of Peninsular bighorn sheep in the action area has increased, adult survival rates are high, and movement among ewe groups is occurring. A recovery plan for the species was issued in 2000 and actions by several agencies and a regional habitat conservation plan are taking Peninsular bighorn sheep conservation into account. Population estimates derived during the 2016 survey indicate the number of ewes in the recovery region exceed the number needed for downlisting, which demonstrates a major milestone towards recovery (delisting). This increase in the population has occurred during active mining operations at the Project site.

The loss of 608.2 acres of available habitat within the recovery region and the noise that may lead to temporary abandonment of suitable habitat or a disruption in reproduction or lambing activities will be mitigated with implementation of conservation measures. These include minimizing habitat disturbance (CM 1), restoring mined sites (CM 2), implementing avoidance buffers (CM 8), acquiring lands for long-term habitat conservation (CM 9), avoiding new ground-disturbing activities during lambing season (CM 11), and notification of new quarry activities in active use areas (CM 12). The conservation measures provided by the Applicant are commensurate to the likely Project impacts considering the species status and threats. In this context, they appropriately minimize effects of the proposed project and adequately mitigate its net, residual effects, such that it is not likely to cause significant impairment of recovery efforts for the species. Therefore, we do not anticipate the Project will lead to a significant decline in reproduction, numbers, or distribution and we do not anticipate adverse effects to recovery.

Cumulative Effects

Cumulative effects include the effects of future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service has no information regarding any future State, local, private, or certain tribal actions that are reasonably certain to occur in the action area that would have an adverse effect on Peninsular bighorn sheep that would result in a loss to reproduction, numbers, and distribution in the action area.

Conclusion

After reviewing the status, environmental baseline for the action area, effects of the proposed action, and cumulative effects, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of the Peninsular bighorn sheep or destroy or adversely modify, as a whole, designated critical habitat. We base this decision on the following:

1. While the proposed Project is adjacent to habitat with resources that support feeding, breeding, and sheltering, and Peninsular bighorn sheep occur within the mountains surrounding the Project site, location data from radio-collared sheep indicate that Peninsular bighorn sheep use the hillsides and slopes rather than the canyon where the Project is located; therefore, most of the resources to support reproduction, numbers, and distribution of the species will be avoided by mining and reclamation activities.

2. Peninsular bighorn sheep continue to use habitat in and around the action area despite active mine operations ongoing since 1921. Because ewe groups adjacent to active mining have become accustomed to some degree to human presence and noise and the Project will be implemented incrementally in phases over the course of 80 years, we expect the increase of noise and human activity would not result in sheep abandoning the hillsides around the Project site and the existing distribution of sheep around the mine will be unaffected.

3. The adverse effects of mine expansion and reclamation activities on reproduction would be avoided and/or minimized by implementation of conservation measures described above in the Description of the Proposed Action section.

4. The rugged mountain habitat on three sides of the Project, which includes critical habitat, would continue to provide necessary resources essential to the conservation of the species.

5. The potential loss of up to 608.2 acres of designated critical habitat represents a negligible percentage of the designated critical habitat otherwise available to the population in the recovery region, and this potential loss would not disrupt population connectivity or cause other significant impacts to the physical and biological features in the action area. Therefore, the Project would not result in the adverse modification or

> destruction of critical habitat that would appreciably diminish the value of critical habitat as a whole for the conservation of the species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act, and Federal regulation pursuant to section 4(d) of the Act, prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below for Peninsular bighorn sheep are non-discretionary and must be undertaken by the BLM and the Corps as binding conditions of any grant or permit issued to the Applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The BLM and the Corps have a continuing duty to regulate the activity covered by this incidental take statement. If the BLM or the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the BLM and the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

AMOUNT AND EXTENT OF TAKE

Based on information from the mine site, existing mining and reclamation have caused no direct death or injury to Peninsular bighorn sheep. We anticipate that implementation of the Project will not result in death or injury to any Peninsular bighorn sheep. However, we do anticipate that Peninsular bighorn sheep inhabiting the area within and adjacent to future mine phases will alter their behavior to some extent until they habituate to the new mining activity. While we know there are at least six ewes that use the habitat around the mine, we cannot quantify the exact numbers inhabiting the two ewe groups adjacent to the mine. Nonetheless, all the sheep inhabiting these ewe groups will experience the effects of the mine expansion and may temporarily abandon areas they currently use for feeding, breeding, and sheltering, as discussed in the effects section. Therefore, we anticipate some harm to those individuals due to loss or abandonment of habitat, and we use habitat loss and disturbance as surrogates to assess take and set a clear standard for determining when the amount or extent of the taking has been exceeded. Because we cannot quantify the number of individuals, take to sheep will be exempted based on the amount of habitat that will be mined over the life of the project. Therefore, take of Peninsular bighorn sheep is anticipated and exempted as follows:

1. The loss of up to 608.2 acres of habitat from construction, operation, and reclamation activities.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy or adversely modify or destroy critical habitat for Peninsular bighorn sheep.

REASONABLE AND PRUDENT MEASURES

The Service's evaluation of the Project's effects in this biological opinion includes consideration of the conservation measures developed by the BLM and USG to reduce the adverse effects of the proposed Project on Peninsular bighorn sheep. Any subsequent changes in the conservation measures proposed by the BLM, Corps, or USG or in the conditions under which these activities will occur may constitute a modification of the proposed action and may warrant reinitiation of formal consultation, as specified at 50 CFR § 402.16. These reasonable and prudent measures are intended to supplement the conservation measures that were proposed by the BLM, Corps, and USG as part of the proposed action, and are necessary and appropriate to minimize the impact of the taking on Peninsular bighorn sheep.

1. The BLM, Corps, and USG shall fully implement the conservation measures for this Project as part of the proposed action to minimize the taking of Peninsular bighorn sheep.

2. The BLM, Corps, and USG shall monitor and report the level of incidental take of Peninsular bighorn sheep to the Service throughout the life of the Project and report on the effectiveness of the Project's conservation measures to reduce the impact of incidental take.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, BLM, the Corps, and USG, and their agents and contractors, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and are intended to minimize the impact of the incidental taking. These terms and conditions are non-discretionary (see section 7(o)(2)).

The following terms and conditions implement the reasonable and prudent measures above:

1. To implement reasonable and prudent measure number 1, the BLM, Corps, and USG, including all of their agents/contractors, shall fully implement all Project specifications and conservation measures outlined in this biological opinion as they relate to Peninsular bighorn sheep.

2. To implement reasonable and prudent measure number 2, the BLM, Corps, and USG shall report on compliance with and effectiveness of the Project's conservation

measures, and compliance with the established take threshold for Peninsular bighorn sheep. To do this, USG shall prepare and provide to the Service, BLM, and Corps an annual report by January 31 of each year of the Project. The annual report shall document but not be limited to the following:

a. Any activities determined by the Designated Biologist and Biological Monitors to be out of compliance with Project-specifications and conservation measures outlined in this biological opinion and the corrective measures implemented to bring the Project back into compliance.

b. The total amount and location of Peninsular bighorn sheep habitat, including designated critical habitat, disturbed by construction activities and restored by reclamation activities during the reporting year.

DISPOSITION OF SICK, INJURED, OR DEAD SPECIMENS

Pursuant to 50 CFR § 402.14(i)(1)(v), the BLM must notify the Service immediately at 760-322-2070 (Palm Spring Fish and Wildlife Office) if any Peninsular bighorn sheep are found sick, injured, or dead in the action area. Immediate notification means verbal (if possible) and written notice within 1 workday, and must include the date, time, location, and photograph of the sick or injured animal or carcass, and any other pertinent information. Care must be taken in handling sick or injured individuals to ensure effective treatment, and care in handling dead specimens to preserve biological material in the best possible state.

The BLM must also notify the Service immediately at 760-320-2070 if any endangered or threatened species not addressed in this biological opinion is found dead or injured in the Project footprint during the life of the Project. The same reporting requirements also shall pertain to any healthy individual(s) of any threatened or endangered species found in the action area and handled to remove the animal to a more secure location. Refer to the Terms and Conditions section above for details on reporting procedures.

REINITIATION NOTICE

This concludes formal consultation on the proposed Project for the Peninsular bighorn sheep. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may lapse and any further take may be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending re-initiation.

If you have any questions regarding this document, please contact Felicia Sirchia of the Palm Springs Fish and Wildlife Office at 760-322-2070, extension 405; or felicia_sirchia@fws.gov.

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BIOLOGICAL RESOURCES TECHNICAL REPORT
United States Gypsum Company
Expansion and Modernization Project

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March 2019

BIOLOGICAL RESOURCES TECHNICAL REPORT:
United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

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BIOLOGICAL RESOURCES TECHNICAL REPORT:
United States Gypsum Company Expansion and Modernization Project

ASPEN ENVIRONMENTAL GROUP
March 2019

I. Executive Summary

This Biological Resources Technical Report (BRTR) was prepared under contract to the Lilburn Corporation to support National Environmental Protection Act (NEPA) review of the proposed United States Gypsum (USG) Expansion and Modernization Project. This report describes biological resources present at USG's Plaster City Quarry (quarry) and along two proposed water lines. This report incorporates and updates biological resources described in a Final Environmental Impact Report/ Environmental Impact Statement and attachments, published in 2008, by Imperial County and Bureau of Land Management (CEQA and NEPA lead agencies, respectively).

New biological field surveys were conducted in 2014, 2016, and 2017. This report provides updates mapping of vegetation and habitat; quantifies as well as updated reviews of potential occurrences for special-status species known from the region.

Special-status plants: No state or federally listed threatened or endangered plants, and no BLM-designated Sensitive Plants, have been recorded on the quarry site or pipeline routes. Three special-status plants (California Rare Plant Rank [CRPR] 2B) have been recorded in or around the proposed quarry expansion areas: annual rock-nettle, brown turbans, and narrow-leaf sandpaper-plant. In addition, four plants recognized as "watch-list" species (CRPR 4) have been recorded in or around the quarry area. Potential occurrence for all other special-status plants (not observed during surveys) is summarized in Table 3.

Special-status wildlife: One state and federally listed wildlife species, Peninsular bighorn sheep, occurs in and around the existing and proposed future quarrying areas. In addition, the state and federally listed desert pupfish occurs in the watershed, several miles north of the existing and proposed project facilities. Burrowing owl, a BLM-designated Sensitive Species was observed during Fall of 2014, but no burrowing owls were observed during field surveys conducted during breeding season. Two other BLM Sensitive Species, golden eagle and flat-tailed horned lizard, could occur in or around the project facilities, although they were not observed during field surveys. Other special-status wildlife species observed during field surveys were loggerhead shrike and black-tailed gnatcatcher. Potential occurrence for all other special-status wildlife (not observed during surveys) is summarized in Table 4.

This report briefly summarizes expected project impacts to biological resources, and recommends several mitigation measures to avoid, minimize, or offset those impacts.

II. Project and Property Description

This BRTR describes biological resources at USG's Plaster City Quarry (quarry) and along two proposed water lines to support a Supplemental Environmental Impact Statement (SEIS) in preparation for the USG Quarry Expansion and Modernization Project. The SEIS will supplement a Final Environmental Impact Report / Environmental Impact Statement (EIR/EIS) prepared by the County of Imperial and Bureau of

Land Management in 2008, and subsequently approved by the County. The project is briefly summarized here and shown on Figure 1 (Project Overview); a more complete project description may be found in the 2008 Final EIR/EIS and in Chapter 2 of the SEIS (in preparation). All proposed project activities and facilities would be located in Imperial County, California. The Proposed Action consists of:

- A replacement water line from USG's wells in Ocotillo to the existing Plaster City plant
- A new water line to serve the Plaster City Quarry
- Continuing and expanded quarrying operations at the Plaster City Quarry, including quarry reclamation

Replacement water line. The replacement water line route originates at a well field just south of the Interstate 8 (I-8) freeway in Ocotillo at about 375 feet elevation. It crosses beneath the freeway, and parallels Imperial County Route S80 to the north and east to Plaster City. Along the remainder of its length, the water line is within the existing road right-of-way, on the south side of the road. The eastern five miles of the water line are at the boundary of the BLM Plaster City Open Area for off-highway vehicles (OHVs) (BLM, 1998), and a designated OHV staging area is on the north side of Route S80 west of the Plaster City Plant. The Proposed Action would replace the existing water line by installing a larger line within approximately twenty feet of the existing alignment.

New water line. The proposed new quarry water line would originate at Quarry Well Number 3 and follow an existing narrow-gauge rail line to the quarry itself (Figure 1, Project Overview). The narrow-gauge line is owned and operated by USG to deliver raw materials from the Plaster City Quarry to the Plaster City Plant. The proposed pipeline route is within the narrow-gauge railroad right-of-way, originating at the well site and paralleling the railway to the quarry site. Habitat at the proposed well site and pipeline alignment is relatively stable sandy desert bajada supporting desert shrubland dominated by creosote bush.

Quarry location and operations. The USG Plaster City Quarry is located in the Fish Creek Mountains, about 26 miles northwest of the plant site, on the lower slopes of the Fish Creek Mountains (Figure 1, Project Overview and Figure 2, Plaster City Quarry Vegetation and Landcover). The Proposed Action includes expansion of the quarry areas on a series of mining claims to the south and southeast of the existing quarries. The existing and proposed quarry would be located primarily on private lands, but also would include new disturbance within mining claims on public lands managed by the Bureau of Land Management (BLM). The total acreage of USG's claims on public lands is 73.2 acres, and planned disturbance would be limited to 18.1 acres within them.

The area proposed for continuing and future quarrying is on middle and lower slopes and a broad alluvial wash. Elevation ranges from about 300 feet in the northwest corner to 1,041 feet at a small peak near the eastern boundary of the study area. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by pygmy cedar (*Peucephyllum schottii*) on the gypsum and creosote bush (*Larrea tridentata*) on the metamorphic sedimentary material. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. Alluvial soils throughout the wash area support desert shrublands composed primarily of creosote bush, with stands of smoke tree (*Psorothamnus spinosus*) and catclaw acacia (*Senegalia* [*Acacia*] *greggii*) in the main channels. Quarrying activities would take place on the slopes and on the alluvial wash (to reach below-grade gypsum deposits, as shown in EIS Figure 2-10).

The primary wash and several of its tributaries are shown as ephemeral streams on the U.S. Geological Survey (USGS) topographic maps. Runoff from the project site drains to the north into Fish Creek Wash and then to the Salton Sea, an intrastate lake.

III. Methods

Justin Wood of Aspen Environmental Group reviewed available literature to identify special-status plants, wildlife, or plant communities known from the project vicinity. We reviewed the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2018) for USGS 7.5-minute topographic quadrangles (quads) on which the Plaster City plant, rail line, water line, or quarry expansion areas occur (Borrego Mountain SE, Carrizo Mountain NE, Harpers Well, Plaster City NW, Painted Gorge, Plaster City, and Coyote Wells) and several adjacent quads (Arroyo Tapiado, Harper Canyon, Yuha Basin, Carrizo Mountain, and In-Ko-Pah Gorge).

We also reviewed the California Native Plant Society (CNPS) *On-line Electronic Inventory* (CNPS 2018, for the quads listed above), and searched the Consortium of California Herbaria (2018) for records of special-status plants known from the area. Several special-status species occur only in specialized native habitats that are absent from the project site or occur at higher elevations that were included during the CNDDB search. These plants and animals are listed in Attachment 5, but are not addressed further in this report. All special-status plants and animals known from comparable habitats within the region are identified in Table 3 (plants) and Table 4 (wildlife), which summarize their habitat, distribution, conservation status, and probability of occurrence on the Project site.

This report incorporates the results of biological field surveys by White and Leatherman BioServices conducted in 2002 to support the previous CEQA and NEPA analysis, as follows: Scott White and Brian Leatherman drove the narrow-gauge rail line alignment on 23 April 2002; White drove the length of the replacement water line of 19 June 2002; White and Leatherman drove the replacement water line on 24 July 2002; White and Leatherman surveyed uplands within the quarry expansion area on 23 April 2002; Leatherman conducted surveys on the quarry from 27 to 29 March 2002.

Biological surveys to support the current NEPA review were conducted during October of 2014, April and October of 2016, and March and April of 2017 by Justin Wood (JW), Brian Leatherman (BL), Sandy Leatherman (SL), Greg Stratton (GS), Chez Brungraber (CB), and Michelle Cloud-Hughes (MC) as shown in Table 1. Members of the survey team have extensive experience with the special-status plants from the region, including the State and Federally listed species. They also have experience of the special-status wildlife species of the area.

Table 1. Survey Personnel and Dates

Personnel	Survey Dates	Area Surveyed
JW and SL	October 28-29, 2014	Quarry
JW, BL, GS, CB, and MC	April 4-5, 2016	Quarry
JW, SL, GS, CB, and MC	April 6-7, 2016	Quarry and proposed new pipeline
JW, SL, GS, and CB	April 11-13, 2016	Quarry and proposed replacement pipeline
JW, SL, GS, and MC	October 26-28, 2016	Quarry, both proposed pipelines
SL and CB	March 30-31, 2017	Both proposed pipelines

Surveys were conducted throughout the survey area which included all phases of the planned quarry expansion, the proposed new pipeline alignment, new well location, and existing Ocotillo water line alignment (proposed replacement pipeline). Surveys were conducted using the complete coverage method as described in the Survey Protocols for Special Status Plants which has been developed by BLM-California (BLM, 2009). This method was developed to survey for special status plants on projects that must comply with BLM policy, the National Environmental Policy Act (NEPA), and the Endangered Species

Act (ESA). The spacing between transects was typically ten meters but increased as the topography changed making ten meters spacing impracticable. The ten-meter spacing was intended to allow surveyors to locate small non-descript special-status annual plants. During the survey all special-status plants with a California Rare Plant Rank (CRPR) of 1 or 2 were recorded with a GPS unit. Following the surveys, a CNDDB form was completed for all occurrences separated by more than 0.25 miles.

In conformance with California Department of Fish and Wildlife guidelines (CDFG, 2009), botanical surveys were (a) conducted during flowering seasons for the special-status plants known from the area, (b) floristic in nature, (c) consistent with conservation ethics, (d) systematically covered all habitat types on the sites, and (e) well documented, by this report, photos that will be uploaded to CalPhotos (BSCIT, 2018), and by voucher specimens to be deposited at Rancho Santa Ana Botanic Garden and other herbaria. Documenting the flora with photos and vouchered specimens allows others to verify the identifications of species found within the survey area and can also be used by researchers and scientists to determine what plants have been found in the survey area.

During the field surveys, all plant and wildlife species noted were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations in Baldwin et al. (2012), the Jepson eFlora database of California plants (Jepson Flora Project, 2018), and other regional references. All plant species observed during the surveys are listed in Attachment 4. All special-status plant locations within or immediately adjacent to the survey area will be reported to the CNDDB.

During the surveys Wood mapped vegetation within the Project area by drawing vegetation transitions on aerial images. These field maps were then digitizing into GIS shapefiles using ArcGIS (version 10.4) and one-foot pixel aerial imagery on a 22" diagonal flat screen monitor at the office. Vegetation was named using the names and descriptions in *A Manual of California Vegetation* (Sawyer et al 2009), when possible. The smallest mapping unit mapped was approximately 0.10 acres and most mapped vegetation boundaries are accurate to within approximately 10 feet. The small scale PDF vegetation map provided with this report was generated from ArcGIS shapefiles; the shapefiles were used to calculate areas of each vegetation type and may be viewed at larger scale for management or analysis purposes, if needed. Any vegetation map is subject to imprecision for several reasons:

- Vegetation types tend to intergrade on the landscape so that there are no true boundaries in the vegetation itself. In these cases, a mapped boundary represents best professional judgment.
- Vegetation types as they are named and described tend to intergrade; that is, a given stand of real-world vegetation may not fit into any named type in the classification scheme used. Thus, a mapped and labeled polygon is given the best name available in the classification, but this name does not imply that the vegetation unambiguously matches its mapped name.
- Vegetation types tend to be patchy. Small patches of one named type are often included within mapped polygons of another type. The size of these patches varies, depending on the minimum mapping units and scale of available aerial imagery.

IV. Results

IV. A. Vegetation

The quarry area is characterized by broad sandy wash and adjacent upland slopes and mountains. The wash slopes gently toward the northwest and is fed by several canyons in the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest). The wash is vegetated by several types of wash shrubland and woodland as described below. The uplands are also vegetated by a variety of shrubland types. A total of seven vegetation types were mapped within the Project site. Other land cover types including sparsely vegetated sandy wash and existing development were also mapped within the Project area. Vegetation and cover types within the Project area are described in the following paragraphs and mapped on Figure 2 (Plaster City Quarry Vegetation and Landcover). Acreages of each vegetation and cover type within the Project site are shown in Table 2.

Creosote bush scrub (*Larrea tridentata* Shrubland Alliance). Creosote bush scrub is an upland vegetation type that is characterized by creosote bush (*Larrea tridentata*) which is the dominant shrub. Other species such as dyebush (*Psorothamnus emoryi*), desert straw (*Stephanomeria pauciflora*), and indigo bush (Psoro-Thamnus schottii) are also present but in much lower numbers. It is most common in the uplands along the northwest portion of the Project site.

Creosote bush–white bursage scrub (*Larrea tridentata–Ambrosia dumosa* Shrubland Alliance). Creosote bush–white bursage scrub is an upland vegetation that is characterized by creosote bush and white bursage (*Ambrosia dumosa*) which co-dominate these areas. Several other species are present in these areas including (*Condea emoryi*), desert straw, ocotillo (*Foquieria splendens*), and three species of cholla (*Cylindropuntia* spp.). Scattered catclaw (*Senegalia greggii*) are also present in some of the smaller upland swales that originate in these areas and eventually change to catclaw acacia thorn scrub further downstream.

Catclaw acacia thorn scrub (*Acacia greggii* Shrubland Alliance). Catclaw acacia thorn scrub is a wash vegetation that is dominated by catclaw. Other species such as desert lavender, smoke tree (*Psorothamnus spinosus*), cheesebrush (*Ambrosia salsola*), and sweetbush (*Bebbia juncea*). It is most common in the upper washes and in more isolated portions of the main wash that are slightly protected from scouring flows.

Smoke tree woodland (*Psorothamnus spinosus* Woodland Alliance). Smoke tree woodland is a wash vegetation that is dominated by smoke tree. Other species such as desert lavender, indigo bush, catclaw, desert willow (*Chilopsis linearis*), and cheesebrush (*Ambrosia salsola*) are also present. Several desert ironwood (*Olneya tesota*) were also present within the smoke tree woodlands along the Ocotillo pipeline alignment. It is most common in the large wash that flows through the lower elevations within the Project site. It grows in the most active portion of the wash that is frequently scoured. Some areas mapped as smoke tree woodland have very little vegetative cover, primarily because of scouring floods that hit the area in 2014. Many of the dominate trees and shrubs survived but were buried or knocked over and are continuing to recover. Smoke tree woodland is ranked by CDFW as a sensitive natural community (CDFW 2010).

Desert fir scrub (*Peucephyllum schottii* Shrubland Alliance). Desert fir scrub is an upland vegetation type that grows on the gypsum outcrops within the Project site. It is dominated by desert fir (*Peucephyllum schottii*) with other species such as flat-topped buckwheat (*Eriogonum plumatella*), and creosote bush also present but in much lower numbers. The areas mapped as this vegetation type do not match any of the vegetation types named or described in *A Manual of California Vegetation* (Sawyer et al. 2009). Therefore, we have named it to best match the naming convention used in Sawyer et al (2009). It is a very sparse vegetation type that is made up of three species including desert fir,

Allscale scrub (*Atriplex polycarpa* Shrubland Alliance). Allscale scrub is a dominated by allscale (*Atriplex polycarpa*) and is present along the Ocotillo pipeline alignment. It grows on fine sandy soils and old playa-like habitats near the community of Ocotillo. Other species such as cheesebrush, dyebush, creosote bush, white bursage, and big galleta (*Hilaria rigida*). Fine wind-blown sands are present at several areas along the Ocotillo pipeline.

Tamarisk thickets (*Tamarix* spp. Shrubland Semi-Natural Alliance). Tamarisk thickets was used to map one patch of vegetation dominated by saltcedar (*Tamarix ramosissima*) and athel tamarisk (*Tamarix aphylla*).

Tamarisk thickets are present in a single location within the Project area where flood waters in 2014 ponded and allowed these species to flourish.

Sparsely vegetated sandy wash. Sparsely vegetated sandy washes are present within the quarry, the northern pipeline alignments and along the Ocotillo pipeline alignment. It is used to map areas that are largely unvegetated washes with scattered shrubs such as sweetbush and cheesebrush. Seedling trees such as smoke tree and desert ironwood may be present but in very low numbers. These washes have a high abundance of spring annuals.

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	**Creosote bush scrub**	**Creosote bush – white bursage scrub**	**Catclaw acacia thorn scrub**	**Desert fir scrub**	**Sparsely vegetated sandy wash**	**Smoketree Woodland**	**Tamarisk Thickets**	**Disturbed/Developed**
Existing Phase 1A	0	0	0	2.3	0	0	0	161.4
Existing Quarry 1B	0	0	0	4.1	0	0	0	146.0
Existing Phase S1	2.6	0	0	6.9	0	0	0	22.5
Existing Phase S2	0.8	0	0	16.9	0	0	0	6.7
Existing Phase S3	2.0	0	0	15.4	0	0	0	1.6
Existing Shoveler Haul Rd	0	0	0	0	0	0	0	3.0
Phase 2	28.2	1.4	17.5	4.7	12.7	3.2	0	20.2
Phase 2p	0	1.8	3.0	0	0.6	0	0	0
Phase 3	7.9	0	15.7	0	3.9	0.6	0.4	7.9
Phase 3p	8.8	0	0	0	1.0	1.1	0	0
Phase 4	0	0	9.4	0.9	7.2	12.8	0.05	16.2
Phase 5	0	0	10.4	0	6.7	4.5	0	9.4
Phase 6	18.6	13.1	1.8	32.6	2.7	0	0	2.4
Phase 6Bp	4.3	0	0	42.9	0	0	0	0.02
Phase 6 Haul Rd	3.3	0	0	0.1	0	0	0	0.2
Phase 7	2.8	25.0	11.3	46.1	2.7	0	0	3.6
Phase 7Bp	1.8	0	0	30.5	0	0	0	0.05
Phase 7 Haul Rd	1.7	0	0	0	0	0	0	0
Phase 8	1.9	70.4	8.0	30.5	2.8	0	0	2.8
Phase 8p	0	4.6	2.0	0	0	0	0	0.2
Phase 9	0	15.6	1.5	36.1	1.0	0	0	0.1
Phase 10	0	0	8.2	0	0.6	0.3	0	4.2
Phase 10p	0	0	19.6	0	0.4	14.2	0	0.3
Mill site claims (multiple)	0.3	10.5	3.1	0	2.3	1.5	0	1.0

Table 2. Vegetation and Land Cover Types by Acreage

	Vegetation and Land Cover Types							
Project Component	**Creosote bush scrub**	**Creosote bush – white bursage scrub**	**Catclaw acacia thorn scrub**	**Desert fir scrub**	**Sparsely vegetated sandy wash**	**Smoketree Woodland**	**Tamarisk Thickets**	**Disturbed/Developed**
Processing Area	0	0	0	1.3	0	0	0	37.8
Total	85.0	142.4	111.5	271.3	44.6	38.2	0.45	447.6

Note that acreage total (1,141) varies slightly from Plan of Operations (1,145) due to rounding error and minor digitizing discrepancies.

Existing development (quarry, roads, railway, and other infrastructure). This cover type was used to map areas that are active quarry, roads (paved and unpaved), railroad, and other developed areas. These areas have a very limited amount of vegetation.

IV. B. Wildlife Habitat

The term *habitat* refers to the environment and ecological conditions where a species is found. Wildlife habitat is often described in terms of vegetation, though a more thorough explanation encompasses further detail such as availability or proximity to water, suitable nesting or denning sites, shade, foraging perches, cover sites to escape from predators, soils that are suitable for burrowing or hiding, proximity of noise and disturbance, and other factors that are unique to each species. For many wildlife species, vegetation reflects important components of habitat, including regional climate, physical structure, and biological productivity and food resources. Thus, the vegetation descriptions in Section IV.A. are useful overarching descriptors for wildlife habitat. The predominant vegetation types in the project area correspond to habitats identified as desert wash (described in Section IV.A., above, as smoke tree woodland and catclaw acacia thorn scrub), desert scrub (described above as creosote bush scrub and creosote bush–white bursage scrub) and alkali desert scrub (described above as allscale scrub) as classified by the California Wildlife Habitat Relationships (Mayer and Laudenslayer, 1988).

Where additional details of habitat suitability are necessary to this analysis, they are provided in the discussion of special-status wildlife species. Examples include the availability of steep slopes and water sources for Peninsular bighorn sheep. The following paragraphs summarize wildlife habitat and list a few of the wildlife species that either have been observed or are expected to occur in the habitat types found within the project site and surrounding area.

Plaster City Quarry. The existing quarry and proposed quarry expansion area is in an elongated valley along an unnamed wash and on the lower hillsides of the northeastern Fish Creek Mountains. The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. The planned quarry expansion area is on middle and lower slopes and the adjacent part of the alluvial wash. Undisturbed upland slopes are composed of two parent materials: gypsum outcrops and metamorphosed sedimentary rock overlying older granitic rock. Both rock types support very sparse desert shrublands dominated by creosote bush on the igneous material and by pygmy cedar on the gypsum. The mountainsides are very steep (average slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus. Exposed ridgetops have thin soil overlying bedrock.

The alluvial wash slopes gently (about 2 percent), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and smaller tributaries, and by sheet flow. Surface runoff drains to the north across the alluvial fan into Fish Creek Wash, through a system of braided tributaries across the bajada to San Felipe Creek and San Sebastian Marsh, and then to the Salton Sea. The alluvial wash has a series of braided channels that evidently are scoured and redirected by infrequent flash flooding. In some areas, the channels are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the 3- to 10-inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. These soils present a poor substrate for burrowing wildlife. The alluvial soils support desert shrublands composed primarily of creosote bush, with stands of smoke tree and catclaw acacia in the main channels.

Gypsum deposits are found on a north-south trend for about 4.5 miles along the northern portion of the Fish Creek Mountains. Contiguous gypsum outcrops range in elevation from 920 feet above mean sea level (MSL) at the southernmost limit of the deposit to about 325 feet MSL at the northernmost exposures. Outlying deposits of gypsum occur east of the main deposit at elevations of 700 to 1,000 feet MSL.

The quarry and adjacent mountains evidently have no permanent or long-lasting seasonal water sources (based on field observations and absence of mapped springs or perennial streams on USGS topographic maps). However, there is a series of natural rock tinajas[1] located about 1.8 miles southeast of the quarry area. The tinajas have been reported as holding water for much of the year, although a volunteer checked the site in November 2017 and found it to be dry. Several additional water sources are located west of the quarry area, within Anza Borrego Desert State Park. These tinajas appear to supply a dependable water source throughout much of the year for wildlife.

A few of the characteristic wildlife species observed in the quarry expansion area are: desert horned lizard (*Phrynosoma platyrhinos*), zebra-tailed lizard (*Callisaurus draconoides*), desert iguana (*Dipsosaurus dorsalis*), mourning dove (*Zenaida macroura*), Costa's hummingbird (*Calypte costae*), verdin (*Auriparus flavipes*), common raven (*Corvus corax*), coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*) and desert woodrat (*Neotoma lepida*). A full list of wildlife species observed at the quarry expansion area is included in Attachment 4.

New water line. The proposed new water line route crosses open desert shrubland on the alluvial slope and immediately adjacent toeslopes northward from the existing quarry, and along the desert bajada to the proposed well site. Soils are generally a mix of rocky coarse-textured alluvium overlain in some areas by windblown sand. The water line route is expected to support common desert wildlife species such as those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands.

Replacement water line. The replacement water line route crosses the desert floor within open desert shrublands and, often, barren areas along roadways. The route is expected to support common desert wildlife species such as those identified for the quarry expansion area, as well as animals such as flat-tailed horned lizard, with specialized adaptations for windblown sands, and opportunistic wildlife species

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[1] A tinaja is a natural cistern-like basin which fills during rainstorms and retains water for an extended period. They are often created by erosional processes in intermittent stream channels, and can serve as water sources for wildlife in otherwise dry landscapes.

commonly seen in disturbed, ruderal, and non-vegetated areas. Examples include common ravens which frequently perch or nest near roadways and feed opportunistically on road-killed animals. Coyotes may also take advantage of these habitats.

Wildlife Movement. In many regions, land development and linear structures such as roadways, railroads, and canals have converted once-contiguous habitat into scattered patches separated by barriers, so that individual animals and entire populations are now isolated in remnant habitat "fragments." Depending on their size and other characteristics, these fragments may not support viable populations of some animals. For example, certain bird populations become locally extinct when their habitat is fragmented by urban development. The Quarry site is in an area that has not been significantly fragmented. Much of the surrounding land is either public open space managed by the BLM or California State Parks, or privately owned undeveloped land. Adequate habitat is available for wildlife movement throughout the general area, especially along ridgelines to the northeast and southwest and in large open areas to the south. In the immediate area, no true barriers to wildlife movement exist, but several man-made deterrents to wildlife movement include active mining and associated facilities, access roads and haul roads. The two pipeline routes are adjacent to existing linear facilities which also may deter wildlife movement to some extent.

IV. C. Climate

Average rainfall in Borrego Springs, approximately 18 miles northwest of the Project area is 5.32 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year (July-June) in Borrego Springs was 2.18 inches, approximately 41% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year In Borrego Springs was 4.43 inches, approximately 83% of the average (U.S. Climate Data 2018). Average rainfall in El Centro, approximately 17 miles east of the existing pipeline is 2.87 inches (U.S. Climate Data 2018). The rainfall total for the 2015-2016 rainfall year in El Centro was 1.89 inches, approximately 66% of the average (U.S. Climate Data 2018). The rainfall total for the 2016-2017 rainfall year was 2.72 inches, approximately 94% of the average (U.S. Climate Data 2018).

IV. D. Special-Status Species

Plants or wildlife may be ranked as special-status species due to declining populations, vulnerability to habitat change, or restricted distributions. Certain species have been listed as threatened or endangered under state or federal Endangered Species Acts. Others have not been listed, but declining populations or habitat availability cause concern for their long-term viability. These appear on lists compiled by resource agencies or private conservation organizations. In this report, "special-status species" is used to include all plants and animals listed as threatened or endangered, recognized by the BLM sensitive, or identified by the California Department of Fish and Wildlife. Table 3 represents all special-status species and their potential to occur on the Project site.

IV. D. 1. Special-status Plants

Table 3 and Attachment 5 list the special-status plant species reported within the USGS 7.5-minute quads surrounding the Project area. No State or federally listed plants were observed during the surveys or have potential to be present. Five special-status plant species (Wolf's opuntia, CRPR 4; winged cryptantha, CRPR 4; annual rock nettle, CRPR 2B; Coulter's lyrepod, CRPR 2B; brown turbans, CRPR 4) were observed and are discussed below. Annual rock nettle was observed at locations shown on Figure 3 (Biological Resources). The other species locations were not mapped due to either widespread occurrences (brown turbans) or low-priority conservation status (Wolf's opuntia, winged cryptantha, and Coulter's lyrepod).

Listed Threatened or Endangered Plants

One State and federally listed endangered plant species, San Diego button-celery (*Eryngium aristulatum* var. *parishii*), has been reported from the USGS 7.5-minute quads surrounding the Project area (CDFW, 2018). This plant occurs only in vernal pools in San Diego, Orange, and Riverside counties, inland as far as the In-Ko-Pah Gorge area. It is considered absent from the Project area due to lack of any suitable vernal pool habitat. No other State or federally listed plants have potential to be present or were identified during the literature review.

BLM Sensitive Plants

Six plants recognized by the BLM as sensitive have at least some potential to be present within the Project area. Of these, none were observed and only two species have at least a moderate potential to be present and are discussed below (text continues following the tables).

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Abronia villosa var. *aurita* Chaparral sand verbena	Annual or perennial herb; sand, about 250–5300 ft. elev.; San Jacinto Mtns, Inland Empire, adj. Colorado Des, Orange & San Diego cos; mostly alluvial fans and benches in western Riverside Co; dunes in deserts; not rare in the deserts	Feb-Jul	FED: none BLM: S CA: S2 CRPR: 1B.1	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Moderate: suitable habitat present.
Acmispon haydonii *(Lotus haydonii)* Pygmy lotus	Perennial herb; rocky places in desert scrub, pinyon juniper woodland; about 1700–4000 ft. elev.; San Diego and Imperial Cos., Baja	Jan-Jun	FED: none BLM: S CA: S3 CRPR: 1B.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Astragalus crotalariae Salton milk-vetch	Perennial herb; sandy flats and alluvial fans; below about 1000 ft. elev.; Sonoran Desert, to Arizona and Baja	Jan-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.	High: Suitable habitat present; records from within 1 mile of Project area.
Astragalus insularis var. *harwoodii* Harwood's milk vetch	Annual herb; sand, mainly dunes, also washes and slopes; below about 1200 ft. elev.; SE Calif. to Ariz., Baja and Sonora (Mexico)	Jan-May	FED: none BLM: none CA: S2 CRPR: 2B.2	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.	High: suitable habitat throughout survey area.
Astragalus lentiginosus var. *borreganus* Borrego milk-vetch	Annual herb; windblown or stabilized dune sand; below about 800 ft. elev.; E Mojave and S Sonoran deserts, Ariz., Baja, Sonora (Mexico);	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Astragalus sabulonum Gravel milk-vetch	Annual/perennial herb; sandy or gravelly soil in flats, washes, roadsides in desert dunes, Mojavean desert scrub, Sonoran Desert scrub; 200–3050 ft. elev.; Imperial, Inyo, Riv., and San Diego Cos.	Feb-Jun	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.	Low: marginally suitable habitat, at edge of geographic range.
Bursera microphylla Little-leaf elephant tree	Drought deciduous tree; rocky slopes, about 600–2300 ft. elev.; scattered occurrences in Imperial, Riverside, San Diego counties to Ariz., Baja, and mainland Mexico	Jun-Jul	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: known from just north of survey area.	Minimal: marginally suitable habitat, not known from within 5 miles of survey area.	Low: known from just northwest of survey area.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

				Project Component		
Special-Status Plant Species	**Habitat and Distribution**	**Flower Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
Calliandra eriophylla Pink fairy-duster	Perennial deciduous shrub; sandy or rocky areas in Sonoran Desert Scrub; 400–4900 ft. elev.; SW U.S. and Baja, Imperial, Riv., and San Diego Cos.	Jan-Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.	Low: suitable habitat present, nearest known population more than 5 miles west of Project area.
Castela emoryi Crucifixion thorn	Perennial shrub; fine sand or silt, slopes, washes, plains, non-saline bottomlands, about 350–2100 ft. elev;. widespread but rare, Calif. deserts to Ariz., Baja and Sonora;	Jun-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Minimal: suitable habitat present, no record within 10 miles.	Low: suitable habitat present,	Minimal: suitable habitat present, no record within 10 miles.
Chaenactis carphoclinia var. *piersonii* Pierson's pincushion	Annual herb; open desert vegetation; about sea level to 1700 ft. elev.; lower slopes of Santa Rosa Mtns, San Diego, Riv. and Imperial Cos;	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.3	Low: suitable habitat present,	Minimal: suitable habitat present, well outside of geographic range.	Low: suitable habitat present,
Chylismia arenaria (Camissonia arenaria) Sand evening-primrose	Annual or perennial herb; desert shrublands, sandy or rocky washes or slopes below about 3000 ft. elev.; Imperial Co., eastern margins of Riv. Co., to Ariz. and Baja Calif.	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: suitable habitat present, not known from within 10 miles,	Minimal: suitable habitat present, outside of geographic range.	Low: suitable habitat present, not known from within 10 miles,
Cryptantha costata Ribbed cryptantha	Annual herb; windblown and stabilized sand, desert shrublands; below about 1650 ft. elev.; Calif., E Mojave and Sonoran deserts, to Ariz. and Baja	Feb-May	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat in washes.	Moderate: suitable habitat in survey area.	Low: marginally suitable habitat in washes.
Cryptantha holoptera Winged cryptantha	Annual herb; desert shrublands; about 100–4000 ft. elev.; E Mojave Desert, Sonoran Desert, to W Ariz. and Nevada (widely scattered)	Mar-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: numerous plants observed within several phases of the quarry.	Moderate: suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Cylindropuntia (*Opuntia*) *wigginsii* Wiggin's cholla	Cactus; sandy soils in Sonoran Desert scrub; about 100–2900 ft. elev.; known from six localities in San Diego, Imperial, and San Bernardino Cos. A sporadic hybrid of *Cylindropuntia ramosissima* and *C. echinocarpa*, generally not considered a valid species.	Mar	FED: none BLM: none CA: S1? CRPR: 3.3	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present	Low: not seen during field surveys, suitable habitat is present

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component Quarry	Project Component Proposed Replacement Pipeline	Project Component Proposed New Pipeline
Cylindropuntia wolfii Wolf's opuntia	Cactus; Sonoran Desert scrub; about 330–4000 ft. elev.; restricted to Imperial and San Diego Cos. In California and south into Baja	Mar-May	FED: none BLM: none CA: S3 CRPR: 4.3	**Present**: dozens of plants observed growing in the southern phases of the quarry.	Low: marginally suitable habitat in survey area.	Moderate: suitable habitat in survey area.
Ditaxis serrata var. *californica* California ditaxis	Perennial herb; sandy washes and canyons, low desert and adj. mtns.; about 100–3250 ft. elev.; La Quinta E to Desert Center, also Anza-Borrego	Mar-Dec	FED: none BLM: none CA: S2? CRPR: 3.2	Moderate: suitable habitat present.	Minimal: outside of geographic range.	Moderate: suitable habitat present.
Eucnide rupestris Annual rock-nettle	Annual herb; rock crevices & cliffs; Sonoran Desert shrubland, about 1600–2000 ft. elev.; Imperial and San Diego cos, Ariz., Baja & mainland Mexico	Dec-Apr	FED: none BLM: none CA: S1 CRPR: 2B.2	**Present**: dozens of plants present within the southern phases of the quarry.	Low: marginally suitable habitat present.	Low: marginally suitable habitat present.
Euphorbia abramsiana (*Chamaesyce abramsiana*) Abrams' spurge	Annual herb; sandy flats; about sea level to 3,000 ft. elev.; East Mojave Desert, Joshua tree NP, and low desert, to Ariz. and Mexico	Aug-Nov	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia arizonica (Chamaesyce arizonica) Arizona spurge	Perennial herb; creosote bush scrub, stabilized sandy flats (in Calif.); below about 1000 ft. elev.; Palm Springs and Borrego Valley areas E to Texas and mainl. Mexico, S to central Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: marginally suitable habitat.	Low: marginally suitable habitat.	Low: marginally suitable habitat.
Euphorbia platysperma Flat-seeded spurge	Annual herb; sandy soils in desert dunes and Sonoran Desert scrub; 200–330 ft. elev.; Calif., Ariz., Sonora Mex.; Imperial, Riv., San Bern. (?), San Diego Cos.	Feb-Sep	FED: none BLM: S CA: S1 CRPR: 1B.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Low: marginally suitable habitat
Funastrum utahense (*Cynanchum utahense*) Utah vine milkweed	Climbing perennial herb; sandy or gravelly soils; about 500–4700 ft. elev.; E and S Mojave Desert through Joshua Tree NP and Anza-Borrego regions, to S Nevada, NW Ariz., and SW Utah	Apr-Jun	FED: none BLM: none CA: S4 CRPR: 4.2	Low: marginally suitable habitat.	Low: marginally suitable habitat	Moderate: suitable habitat

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Horsfordia alata Pink velvet-mallow	Perennial shrub; Sonoran Desert shrublands, rocky canyons or sandy washes; below about 1700 ft. elev.; Riv. and Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Horsfordia newberryi Newberry velvet-mallow	Rocky places, Sonoran Desert shrublands; below about 2600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, and Sonora, Mexico	Winter or spring	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Ipomopsis tenuifolia Slender-leaved ipomopsis	Perennial herb; rocky or gravelly soils in chaparral, desert shrublands, pinyon juniper woodlands; about 300–4000 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.3	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Lupinus excubitus var. *medius* Mountain Springs bush lupine	Shrub; desert shrubland, pinyon juniper woodland; about 1400–4500 ft. elev.; San Diego and Imperial Cos., Baja	Mar-May	FED: none BLM: S CA: S2 CRPR: 1B.3	Minimal: suitable habitat present, outside of geographic range.	Low: marginally suitable habitat present, known from just west of alignment.	Minimal: suitable habitat present, outside of geographic range.
Lycium parishii Parish's desert thorn	Perennial shrub; arid slopes and sand flats; below about 3300 ft. elev.; W low desert (Riv., Imperial, and San Diego Cos.) and (historically) interior valleys (Riv. Co.), disjunct to Ariz. and Sonora, Mexico	Mar-Apr	FED: none BLM: none CA: S1 CRPR: 2B.3	Low: marginally suitable habitat present.	Moderate: suitable habitat, known from just east of the alignment.	Low: minimally suitable habitat
Lyrocarpa coulteri Coulter's (Palmer's) lyrepod	Annual; rocky slopes, washes, gravelly flats, Sonoran Desert shrubland; about 400–2600 ft. elev.; San Diego, Imperial, Riv. Cos., N and central Baja	Dec-Apr	FED: none BLM: none CA: S4 CRPR: 4.3	**Present**: Very few (<5) plants observed within the quarry (see text).	Moderate: marginally suitable habitat, known from just south of the alignment.	Low: marginally suitable habitat
Malperia tenuis Brown turbans	Annual; sandy soils in desert shrublands; about sea level to 1100 ft. elev.; Sonoran Desert, few locations in Calif. (incl. Split Mtn); N Baja	Mar-Apr	FED: none BLM: none CA: S2 CRPR: 2B.3	**Present**: dozens of plants observed at several phases of the quarry expansion.	High: suitable habitat present, known from within 0.5 miles of the alignment.	**Present**: a few plants observed along the alignment near the quarry gate.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

Special-Status Plant Species	Habitat and Distribution	Flower Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Mentzelia hirsutissima Hairy stickleaf	Annual; desert washes, alluvial fans, talus slopes; below about 2000 ft. elev.; scattered Sonoran Desert locations in California and Baja	Mar-Apr	FED: none BLM: none CA: S3 CRPR: 2B.3	Moderate: suitable habitat present; known from within about 2 miles of the quarry.	Moderate: suitable habitat is present; known from within about 5 miles of the alignment.	High: suitable habitat is present; known from within about 1 mile of the alignment.
Mirabilis tenuiloba Slender-lobed four o'clock	Perennial herb; rocky slopes in Sonoran Desert shrublands; about 1000–3600 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat is present	Low: marginally suitable habitat	Low: marginally suitable habitat
Nemacaulis denudata var. gracilis Slender woolly-heads	Annual herb; coastal and desert dunes, desert shrubland; below about 2600 ft. elev.; Coachella Valley and (disjunct) San Diego Co. coast, Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Minimal: no suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.	Low: marginally suitable windblown sand habitat.
Petalonyx linearis Narrow-leaf sandpaper-plant	Perennial shrub; sandy and rocky canyons in Sonoran and Mojavean Desert scrubs; below about 4,000 ft. elev.; Riv., San Diego, Imperial Cos., Ariz., Baja, Sonora, Mexico	Mar-May	FED: none BLM: none CA: S2S3 CRPR: 2B.3	High; reported from the quarry in 2005. Suitable habitat is present.	Low: marginally suitable habitat.	High; suitable habitat present; known from within about 1 miles of the alignment.
Pholistoma auritum var. *arizonicum* Arizona pholistoma	Annual herb; Mojavean Desert scrub; 900–2740 ft. elev.; Calif., Ariz., Baja and Sonora Mexico	Mar	FED: none BLM: none CA: S3 CRPR: 2B.3	Low: suitable habitat present; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.	Low: suitable habitat present; not observed during surveys; more than 10 miles from nearest record.
Pilostyles thurberi Thurber's pilostyles	Internal stem parasite on *Psorothamnus*, esp. *P. emoryi*; usually windblown or stabilized sand; below about 1000 ft. elev.; Colorado Desert through SW states and Sonora, Mexico	Jan	FED: none BLM: none CA: S4 CRPR: 4.3	Moderate: suitable habitat present	High: suitable habitat is present and *Psorothamnus emoryi* is common along the alignment.	**Present**: approximately ten plants observed on the northern pipeline alignment.

Table 3. Special-Status Plant Occurrence Probabilities in the Project Area.

				Project Component		
Special-Status Plant Species	**Habitat and Distribution**	**Flower Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
Proboscidea althaeifolia Desert unicorn-plant	Perennial herb; generally sandy soils, desert shrubland, about 500–3300 ft. elev.; Sonoran Desert to Arizona and Mexico	May-Aug	FED: none BLM: none CA: S4 CRPR: 4.3	Low: marginally suitable habitat present	Low: marginally suitable habitat present	Low: marginally suitable habitat present
Selaginella eremophila Desert spike-moss	Perennial herb; mountainous or hillside rock outcrops and crevices, about 600–3000 ft. elev.; lower desert-facing slopes of San Jacinto Mtns and adj. desert, to Texas and Baja	May-Jul	FED: none BLM: none CA: S2S3 CRPR: 2B.2	Low: marginally suitable habitat present.	Minimal: no suitable habitat present	Minimal: no suitable habitat present.
Senna covesii Coves's cassia	Low-growing, mostly herbaceous perennial; desert washes; 740–4250 ft. elev.; Colorado Desert to Nevada, Arizona and Baja Calif.	Apr-Jun	FED: none BLM: none CA: S3 CRPR: 2B.2	Low: marginally suitable habitat present	Minimal: well below the elevation range.	Minimal: well below the elevation range.
Teucrium cubense ssp. *depressum* Dwarf germander	Annual or perennial herb; sandy alluvium, washes, etc., below about 1300 ft. elev.; scattered Sonoran Desert locations, to Texas and Baja Calif.	Mar-May	FED: none BLM: none CA: S2 CRPR: 2B.2	Low: marginally suitable habitat	Low: marginally suitable habitat	Low: marginally suitable habitat
Xylorhiza orcuttii *(Machaeranthera orcuttii)* Orcutt's woody aster	Perennial herb; gen. on gypsum soils; canyons or lower slopes, desert shrublands; sea level to about 1200 ft. elev.; Riv., Imperial, and San Diego Cos., N Baja	Mar-Apr	FED: none BLM: S CA: S2 CRPR: 1B.2	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity	Moderate: suitable habitat present, known from numerous occurrences in the vicinity

General references: Baldwin et al., 2012; BLM, 2010; CDFW, 2018; CNPS, 2018; CCH, 2018.

***Federal designations* (*Fed*):** (federal ESA, USFWS).

END:	Federally listed, endangered.
THR:	Federally listed, threatened.
Candidate:	Sufficient data are available to support federal listing, but not yet listed.
Proposed:	Formally proposed for the federal status shown.
BGEPA:	Bald and golden eagle protection act.
BCC:	Birds of conservation concern.

Bureau of Land Management (BLM)
Sensitive: Species recognized by the BLM as sensitive.

State designations (CA): (CESA, CDFW)
END: State listed, endangered.
THR: State listed, threatened.
RARE: State listed as rare (applied only to certain plants).
CSC: California Species of Special Concern. Considered vulnerable to extinction due to declining numbers, limited geographic ranges, or ongoing threats.
WL: Species that were either previously listed as SC and have not been state listed under CESA; or were previously state or federally listed and now are on neither list; or are on the list of "Fully Protected" species.
FP: Fully protected. May not be taken or possessed without permit from CDFG.
SA: Special animal. Tracked by the CNDDB as species of conservation concern.

CDFW Natural Diversity Data Base Designations: Applied to special-status species; where correct category is uncertain, CDFW uses two categories or question marks.
S1: Fewer than 6 occurrences or fewer than 1000 individuals or less than 2000 acres.
S1.1: Very threatened
S1.2: Threatened
S1.3: No current threats known
S2: 6-20 occurrences or 1000-3000 individuals or 2000-10,000 acres (decimal suffixes same as above).
S3: 21-100 occurrences or 3000-10,000 individuals or 10,000-50,000 acres (decimal suffixes same as above).
S4: Apparently secure in California; this rank is clearly lower than S3 but factors exist to cause some concern, i.e., there is some threat or somewhat narrow habitat. No threat rank.
S5: Demonstrably secure or ineradicable in California. No threat rank.
SH: All California occurrences historical (i.e., no records in > 20 years).
SX: Presumed extirpated in California.

California Rare Plant Rank designations. Note: According to the California Native Plant Society (http://www.cnps.org/cnps/rareplants/ranking.php), plants ranked as CRPR 1A, 1B, and 2 meet definitions as threatened or endangered and are eligible for state listing. That interpretation of the state Endangered Species Act is not in general use.
1A: Plants presumed extinct in California.
1B: Plants rare and endangered in California and throughout their range.
2A Plants presumed extinct in California but more common elsewhere in their range.
2B: Plants rare, threatened or endangered in California but more common elsewhere in their range.
3: Plants about which we need more information; a review list.
4: Plants of limited distribution; a watch list.

California Rare Plant Rank Threat designation extensions:
.1 Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Fairly endangered in California (20-80% occurrences threatened)
.3 Not very endangered in California (<20% of occurrences threatened or no current threats known)

Definitions of occurrence probability: Estimated occurrence probabilities are based on literature sources cited earlier, field surveys, and habitat analyses reported here.
Present: Observed on the site by qualified biologists.
High: Habitat is a type often utilized by the species and the site is within the known range of the species.
Moderate: Site is within the known range of the species and habitat on the site is a type occasionally used.
Low: Site is within the species' known range but habitat is rarely used, or the species was not detected during focused survey(s) covering less than 100% of potential habitat or completed in marginal seasons.
Minimal: No suitable habitat on the site; or well outside the species' known elevational or geographic ranges; or the species was not detected during focused survey(s) covering 100% of all suitable habitat, completed during the appropriate season and during a year of appropriate rainfall.
Absent: No suitable habitat on the site and these has no potential to be present.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

				Project Component		
Special-Status Wildlife Species	**Habitat and Distribution**	**Activity Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
FISHES						
Cyprinodon macularius Desert pupfish	Desert ponds, springs, marshes, and creeks in southern California. Restricted to tributaries of the Salton Sea (i.e. Salt Creek and San Felipe Creek) and several refuge populations.	Year-around	FED: **END** BLM: none CA: **END,** S1	Absent: no aquatic habitat within the Project area. Known from approx. 9.5 miles to the NE.	Absent: no aquatic habitat within the Project area. No record near the pipeline alignment.	Absent: no aquatic habitat within the Project area. Known from approx. 7 miles to the NE
REPTILES						
Coleonyx switaki Barefoot banded gecko	Massive rock outcrops and boulders; below about 2000 ft. elev.; Anza-Borrego Desert State Park through much of NE Baja	Spring-Summer	FED: none BLM: S CA: **THR**, S1	Low: no suitable habitat on gypsum outcrops or alluvial wash; marginally suitable habitat on adjacent metamorphic outcrops; not found during field surveys.	Minimal: no suitable habitat.	Minimal: no suitable habitat.
Phrynosoma mcalli Flat-tailed horned lizard	Open, sand flats and dunes; below about 850 ft. elev. Coachella Valley southward to N Baja	Spring-Summer	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Moderate: suitable habitat present; heavy off-road vehicle use reduces likelihood of occurrence.	High: suitable habitat present; known from two recent records along alignment.
Uma notata Colorado Desert fringe-toed lizard	Fine, loose, windblown sand; sparse desert scrub, desert dunes, dry lakebeds, desert wash, sandy beach or riverbank; below 590 ft. elev.; Colorado and Sonoran deserts south of Salton Sea in Imperial and San Diego Cos.	Mar-Oct	FED: none BLM: S CA: SSC, S2	Minimal: marginally suitable habitat.	Minimal: marginally suitable habitat; heavy off-road vehicle use reduces likelihood of occurrence.	Moderate: suitable habitat; no records in vicinity.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
BIRDS						
Accipiter striatus Sharp-shinned hawk	Nests and hunts in forest & woodland mainly north of S Calif. (may breed in S Calif. mtn woodlands); also forages in open areas; regularly winters in S Calif.	Spring-early Summer	FED: none BLM: none CA: WL, S4	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.	Minimal (Nesting): no suitable nesting trees. Low (Wintering): marginal foraging habitat present.
Aquila chrysaetos Golden eagle	Nests in remote trees and cliffs; forages over shrublands and grasslands; breeds throughout W N America, winters to E coast	Year-around	FED: BGEPA, BCC BLM: S CA: FP, WL, S3	Low (Nesting): no nests observed, marginally suitable nesting habitat. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout
Athene cunicularia Burrowing owl	Nests mainly in rodent burrows, usually in open grassland or shrubland; forages in open habitat; increasingly uncommon in S Calif.; occurs through W US and Mexico; sparse in desert scrub	Year-around	FED: BCC BLM: S CA: SSC, S3	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. **Present** (Wintering): one occupied burrow observed during surveys.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.	Moderate (Nesting): suitable nesting habitat present; not observed during nesting season. High (Wintering): suitable foraging habitat throughout.
Buteo regalis Ferruginous hawk	Forages over grassland and shrubland; winters in W and SW N Amer.; breeds in Great Basin and N plains.	Winter	FED: BCC BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. High (Winter): foraging habitat present throughout.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

				Project Component		
Special-Status Wildlife Species	**Habitat and Distribution**	**Activity Season**	**Conservation Status**	**Quarry**	**Proposed Replacement Pipeline**	**Proposed New Pipeline**
Buteo swainsoni Swainson's hawk	Forages in open grasslands, agricultural areas, sparse shrublands, and small open woodlands. Nests in Western Antelope, San Joaquin, and Owens Valleys in scattered trees within grasslands, shrublands, or agricultural landscapes.	Spring and Fall	FED: none BLM: S CA: THR, S3	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.	Absent (Nesting): does not breed within region. High (Migration): foraging habitat present, known to migrate through region.
Chondestes grammacus Lark sparrow	Lowlands, foothills; brushy habitats with scattered trees or shrubs; much of Calif.	Year-around	FED: none BLM: none CA: SA, S4S5	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
Circus cyaneus Northern harrier	Breeds colonially in grasslands and wetlands; forages over open terrain; throughout N America	Winter; rare in Summer	FED: none BLM: none CA: SSC, S3	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco columbarius Merlin	Uncommon in winter in S Calif. desert and valleys; breeds in northern N America	Winter	FED: none BLM: none CA: WL, S3S4	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.	Absent (Nesting): does not breed within region. Moderate (Winter): foraging habitat present throughout.
Falco mexicanus Prairie falcon	Nests on high cliffs, forages primarily over open lands; occurs throughout arid western US and Mexico	Year-around	FED: none BLM: none CA: WL, S4	Moderate (Nesting): no nests observed, suitable nesting habitat present. High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout.	Absent (Nesting): no nesting habitat, High (Foraging): suitable foraging habitat throughout

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Lanius ludovicianus Loggerhead shrike	Woodlands, shrublands, open areas with scattered perch sites; not dense forest; widespread in N America (declining significantly in midwest); valley floors to about 7000 ft. elev.	Year-around	FED: none BLM: none CA: SSC, S4	**Present**: observed during surveys.	High**:** suitable habitat is present throughout.	High**:** suitable habitat is present throughout.
Polioptila melanura Black-tailed gnatcatcher	Desert shrublands, gen. thickets of mesquite, palo verde, or acacia, occas. in open shrubland (mostly winter); Calif. deserts thru S Texas, Baja, and arid mainl. Mexico	Year-around	FED: none BLM: none CA: WL, S3S4	**Present**: observed nesting during surveys.	Low: marginally suitable habitat within alignment.	Moderate: suitable habitat within alignment; not observed.
Toxostoma lecontei LeConte's thrasher	Open shrubland, often sandy or alkaline flats; Mojave and Colorado deserts, SW Central Val. & Owens Valley, east to Nevada, Utah, Arizona;	Year-around	FED: BCC BLM: none CA: SA, S3	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.	Low: suitable habitat present; not observed during surveys.
MAMMALS						
Macrotus californicus (*M. waterhousii*) California leaf-nosed bat	Desert shrublands and arid lowlands, W San Diego Co. to W Ariz., Baja and Sonora, Mexico; gen. roosts in mineshafts, forages over open shrublands	Year-around	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Antrozous pallidus Pallid bat	Rock outcrops in shrublands, mostly below about 6000 ft. elev.; Calif, SW N Amer. through interior Oregon and Washington; hibernates in winter	Warm season	FED: none BLM: S CA: SSC, S3	Low (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component		
				Quarry	Proposed Replacement Pipeline	Proposed New Pipeline
Corynorhinus (*Plecotus*) *townsendii* Townsend's big-eared bat (incl. “pale,” “western,” and other subspecies)	Many habitats throughout Calif and W N Amer., scattered populations in E; day roosts in caves, tunnels, mines; feeds primarily on moths	Year-around	FED: none BLM: S CA: SSC, S2	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Euderma maculatum Spotted bat	Desert (cool seasons) to pine forest (summer), much of SW N Amer. but very rare; roosts in deep crevices in cliffs, feeds on moths captured over open water	Unknown	FED: none BLM: S CA: SSC, S3	Minimal (Roosting): marginally suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Eumops perotis californicus Western mastiff bat	Lowlands (with rare exceptions); cent. and S Calif., S Ariz., NM, SW Tex., N Mexico; roosts in deep rock crevices, forages over wide area	Year-around	FED: none BLM: S CA: SSC, S3S4	High (Roosting): roosts just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.
Nyctinomops femorosaccus (*Tadarida femorosaccus*) Pocketed free-tailed bat	Deserts and arid lowlands, E Riv. and San Diego Cos. Thru SW US, Baja, mainland Mexico; roosts mainly in crevices of high cliffs; forages over water and open shrubland	Year-around	FED: none BLM: none CA: SSC, S3	High (Roosting): known to roost on sandstone cliffs just west of the Project area, suitable roosting habitat present. High (Foraging): suitable foraging habitat throughout	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.	Absent (Roosting): no suitable roosting habitat. High (Foraging): suitable foraging habitat present, known from region.

Table 4. Special-Status Wildlife Occurrence Probabilities in the Project Areas.

Special-Status Wildlife Species	Habitat and Distribution	Activity Season	Conservation Status	Project Component: Quarry	Project Component: Proposed Replacement Pipeline	Project Component: Proposed New Pipeline
Chaetodipus fallax pallidus Pallid San Diego pocket mouse	Desert scrub, desert succulent scrub, pinyon and juniper woodland; prefers sandy, herbaceous areas, usually in association with boulders, rocks or coarse gravel.	Year-around	FED: none BLM: none CA: SSC, S3S4	Low: At eastern edge of range; suitable habitat present.	Minimal: At eastern edge of range; marginally suitable habitat.	Low: At eastern edge of range; suitable habitat present.
Neotoma albigula venusta Colorado Valley woodrat	Desert shrublands; SE Calif., SW Ariz., adj. Mexico, and southernmost Nevada; closely associated with beavertail or mesquite thickets	Year- around	FED: none BLM: none CA: SA, S1S2	Low: At edge of range; suitable habitat present.	Minimal: At edge of range; marginally suitable habitat.	Low: At edge of range; suitable habitat present.
Onychomys torridus ramona Southern grasshopper mouse	Mainly desert scrub, also chaparral, coastal scrub, riparian, and other habitats; Mojave Desert and southern Central Valley of Calif.	Year-around	FED: none BLM: none CA: SSC, S3	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.	Low: suitable habitat present; not captured during mammal trapping, no records within 5 miles.
Taxidea taxus American badger	Mountains, deserts, interior valleys where burrowing animals are avail as prey and soil permits digging; throughout cent and W N Amer.	Year-around	FED: none BLM: none CA: SSC, S3	High: suitable habitat present; no sign observed during surveys.	Moderate: suitable habitat present; heavy disturbance in area, no sign observed during surveys.	High: suitable habitat present; no sign observed during surveys.
Ovis canadensis nelsoni pop. 2 (*O. c. cremnobates*) Peninsular bighorn sheep Distinct Population Segment	Desert shrublands to conifer forest, gen. remote mountains; scattered populations in Peninsular Ranges, Riv. Co. to N Baja	Year-around	FED: **END** BLM: none CA: **THR**, FP, S2	**Present**: observed during surveys.	Minimal: marginally suitable habitat and isolated from nearby mountains by a busy highway.	Low: marginally suitable habitat and isolated from nearby mountains by a railway.
Vulpes macrotis arsipus Desert kit fox	Arid areas with grasslands, agricultural lands, or scrub areas with scattered shrubby vegetation. Requires open, level areas with loose-textured, sandy loamy soils for digging dens. SW US and N Mex.	Year-around	FED: none BLM: CA: FP	High: no sign observed during surveys, suitable habitat present throughout.	Moderate: no sign observed during surveys, marginally suitable habitat present.	High: no sign observed during surveys, suitable habitat present throughout.

References: American Ornithologists Union, 1998 (including supplements through 2013); Barbour and Davis, 1969; BLM, 2010; CDFW, 2018; Feldhammer et al., 2003; Garrett and Dunn, 1981; Hall, 1981; Jennings and Hayes, 1994; Stebbins, 2003; Wilson and Ruff, 1999.

Conservation Status and Occurrence Probability defined in footnote to Table 3.

Chaparral sand verbena (*Abronia villosa* var. *aurita*). Chaparral sand verbena is a BLM sensitive species and has a CRPR of 1B.1. It is a perennial herb in the four o'clock (Nyctaginaceae) family. It grows in the western Sonoran Desert, San Jacinto Mountains, and coastal sides of southern California mountains (CNPS, 2018). In the desert, it is found in desert shrublands on dunes, sandfields, and sandy washes. Chaparral sand-verbena is an annual or perennial herb that tends to integrate with the common desert sand-verbena (*A. villosa* var. *villosa*). Its distribution and identification are unclear in published reference works, including Murdock (2012), CNPS (2018), and CNDDB (CDFW, 2018). The conservation concern is primarily for chaparral sand-verbena occurrences in western Riverside County and other locations outside the desert where the variety is considered rare (Roberts et al. 2004).

Chaparral sand verbena was not observed within the Project area during focused surveys, which were conducted during two years with below average rainfall. It has a moderate potential to be present along the northern pipeline alignment following a year with higher than average rainfall.

Orcutt's aster (*Xylorhiza orcuttii*). Orcutt's aster is a BLM sensitive species and has a CRPR of 1B.2. It is a woody perennial in the aster (Asteraceae) family that blooms from March to April (CNPS, 2018). It grows in the western Sonoran Desert from the Salton Sea in the east to Anza Borrego State Park in the west, north to near Salton City and south to near Interstate 8. It is a woody perennial that is present year-round and flowers in the spring (CNPS, 2018). It is most commonly found in arid canyons and nearly barren slopes in areas vegetated by creosote-bush scrub (Baldwin et al. 2012). Several of the records also note that it grows on sandy, clay, alkali, and gypsum substrates (CDFW, 2018).

Orcutt's aster was not observed during focused surveys of the Project area. It has a moderate potential to be present within all three components of the Project area as a waif from upstream populations that are known to occur within 0.75 miles of the Project area.

Other Special-status Plants

Several other special-status plant species ranked by CNPS and CDFW has at least a moderate potential to be present. These include several plants ranked a CRPR 2 species and CRPR 4 species. These species, with at least a moderate potential to be present are described below.

Harwood's milk vetch (*Astragalus insularis* var. *harwoodii*). Harwood's milk vetch has a CRPR of 2B.2. It is an annual herb in the pea (Fabaceae) family that blooms from March to April (CNPS, 2018). It grows in sandy, windblown soils throughout much of the western Sonoran Desert from near Anza Borrego State Park in the south, to the Whipple Mountains in the north and east into Arizona (CDFW, 2018). It is an annual that requires adequate rainfall to trigger germination. It is known from several records in the immediate vicinity of the existing pipeline near Plaster City, and was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Harwood's milk vetch was not observed during focused surveys of the Project area, which were conducted during two years with below average rainfall. It has a high potential to be present in fine sand accumulations within all three components of the Project area in a year with higher than average rainfall.

Annual rock-nettle (*Eucnide rupestris*). Annual rock-nettle has a CRPR of 2B.2. It is an annual herb in the stick-leaf (Loasaceae) family and blooms from December through April. It is found in Sonoran Desert scrub at elevations from about 400 to 2,000 feet in California (Imperial and San Diego counties), Arizona, and northern Mexico. In California, it has been documented growing on gypsum soils. However, further south into Mexico it does not seem to show any soil affinity and has been observed on volcanic soils as well as more typical granitic substrates (SEINET, 2018).

Annual rock-nettle was observed within the Project area during focused surveys. Dozens of plants were growing on eroded gypsum cliffs, in adjacent gypsum bedrock, and downstream in sandy washes. All observations were in the southeastern phases of the quarry including Phases 6 through 9. Additional plants are not expected in other portions of the Project area.

Parish's desert thorn (*Lycium parishii*). Parish’s desert thorn has a CRPR of 2B.3. It is a shrub in the nightshade (Solanaceae) family and blooms in the Spring (CNPS, 2018). It is found in a number of isolated locations throughout southern California with the largest concentration in Anza Borrego State Park (CCH, 2018). It is historically known from within about 1 mile of the existing pipeline near Plaster City.

Parish’s desert thorn was not observed during the focused surveys of the Project area. It has a moderate potential to be present along the existing pipeline near Plaster City.

Brown turbans (*Malperia tenuis*). Brown turbans has a CRPR of 2B.3. It is an annual herb in the aster (Asteraceae) family and blooms from February through April (CNPS, 2018). It is found in sandy or gravelly areas of Sonoran Desert scrub at elevations from about 50 to 1,100 feet in California (Imperial and San Diego counties) and Baja California, Mexico. It is known from numerous locations in the vicinity of the Project area (CCH, 2018).

Dozens of plants were observed within Phases 7 through 9, primarily on rocky slopes and flats adjacent to the sandy washes. Several plants were also observed along the proposed pipeline near the entrance gate to the quarry. Additional plants are likely to be present in similar habitats within the Project area in a year with higher than average rainfall. It also has a high potential to be present along the existing pipeline although it was not observed during the surveys.

Hairy blazingstar (*Mentzelia hirsutissima*). Hairy blazingstar has a CRPR of 2B.3. It is an annual herb is the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on rocky substrates and talus in the Sonoran Desert at elevations up to about 2,000 feet in California (Imperial and San Diego counties) and in Baja California, Mexico. It was documented in 2017 within about 0.5 miles of the proposed pipeline alignment (CCH, 2018 and Calflora, 2018).

Hairy blazingstar was not observed during the focused surveys of the Project area, which were conducted during two years with below average rainfall. It has a high potential to be present within the quarry and along the proposed pipeline alignment in a year with higher than average rainfall.

Narrow-leaf sandpaper-plant (*Petalonyx linearis*). Narrow-leaf sandpaper-plant has a CRPR of 2B.3. It is a shrub in the stick-leaf (Loasaceae) family and blooms from March to May (CNPS, 2018). It is found on sandy and rocky substrates in a variety of habitats throughout the Sonoran Desert. It was documented on gypsum soil in 2015 just south of the Project area. Narrow-leaf sandpaper-plant was reported from the Project area in an earlier report (White and Leatherman, 2005) although it was not observed during the recent surveys and may no longer be present. It has a high potential to be present in the quarry and has a moderate potential to be present within the proposed pipeline alignment.

California Rare Plant Rank 4 Species. Four special-status plants with a CRPR of 4 were observed during the surveys: winged cryptantha (*Cryptantha holoptera*), Wolf’s opuntia (*Cylindropuntia wolfii*), Thurber’s pilostyles (*Pilostyles thurberi*), and Coulter's lyrepod (*Lyrocarpa coulteri*). Winged cryptantha and Coulter’s lyrepod were both observed at several locations in the upper wash within Phases 6 through 9. Dozens of Wolf’s opuntia were observed on upland terraces within Phases 7 through 9. Thurber’s pilostyles were observed growing on dyebush along the proposed pipeline.

Four special-status plants with a CRPR of 4 have at least a moderate potential to be present: Salton milk-vetch (*Astragalus crotalariae*), ribbed cryptantha (*Cryptantha costata*), Utah vine milkweed (*Funastrum utahense*), and slender-lobed four o'clock (*Mirabilis tenuiloba*). These plants are ranked as CRPR 4 species (i.e., a "watch list," not indicating rarity) and none are listed as threatened or endangered.

IV. D. 2. Special-status Wildlife

Table 4 and Attachment 5 list the special-status wildlife species reported within the USGS 7.5-minute quads surrounding the Project site. The State and federally listed Peninsular bighorn sheep is present in the area. Two candidates for State listing, flat-tailed horned lizard and Townsend's big-eared bat, may also occur. Loggerhead shrike, San Diego desert woodrat, and burrowing owl, all California Species of Special Concern, have been observed on the Project site. The locations of field observations of burrowing owl and peninsular bighorn sheep remains are shown on Figure 3 (Biological Resources). Several other special-status wildlife species could also be present (see Table 4); those species with at least a moderate potential to be present are described below.

Listed Threatened or Endangered Wildlife

Peninsular bighorn sheep (*Ovis canadensis nelsoni* DPS). The Peninsular bighorn sheep (PBS) is federally listed as endangered, State-listed as threatened and designated as a "fully protected animal" by the California Fish and Game Code. Under the federal Endangered Species Act listing (USFWS, 2009) "Peninsular bighorn sheep" refers to the regional Distinct Population Segment (DPS) of desert bighorn sheep (or Nelson's bighorn sheep). Under the 1971 California Endangered Species Act listing, Peninsular bighorn sheep refers to the subspecies *Ovis canadensis cremnobates*, although that subspecies is no longer recognized in more recent literature. Regardless of nomenclature, both listing designations refer to the same animals: the bighorn sheep population found in the Peninsular Ranges of southern California and southward into Baja California. This population is recognized as genetically isolated from other populations located farther to the north and east. PBS inhabit the desert slopes of the Peninsular ranges from Riverside County south to Baja California, Mexico, including the Fish Creek Mountains, where the Plaster City Quarry is located. PBS biology, life history, and conservation status are described by the US Fish and Wildlife Service (USFWS 2011a) in its 5-year review. A few key aspects of its life history are seasonal movements and habitat use, reliance on surface water availability, and metapopulation geography.

The decline of PBS is attributed to combined effects of disease and parasitism; low lamb recruitment; habitat loss, degradation, and fragmentation; non-adaptive behavioral responses associated with residential and commercial development; and high predation rates.

The USFWS (2000) has prepared a Recovery Plan for PBS, identifying 9 Recovery Regions, extending from the northernmost Recovery Region 1 on the desert-facing slopes of the San Jacinto Mountains (about 50 miles north of the Plaster City Quarry), to the southernmost Recovery Region 9 extending from the Coyote Mountains (about 10 miles south of the quarry expansion area) south to the international border (the range of the animals within Recovery Region 9 extends southward through the Coyote Mountains, across Interstate 8, and across the international border into Mexico). The Plaster City Quarry is located within Recovery Region 8 (Vallecito Mountains). The estimated numbers of Peninsular bighorn sheep in Recovery Regions 8 and 9 increased during the period from 1998 to 2016 (USFWS, 2011a; Colby and Botta, 2017). CDFW (Colby and Botta, 2017) estimated the Region 8 and Region 9 populations at 163 and 256 animals respectively.

The behavioral response of desert bighorn sheep (including PBS) to human activity is considered to be highly variable and dependent upon many factors, including: (1) the type of activity, (2) an animal's previous experience with humans, (3) size or composition of the bighorn sheep group, (4) location of the bighorn sheep relative to elevation of the activity, (5) distance to escape terrain, and (6) distance to the activity (USFWS 2011a, p. 14). Responses can range from cautious curiosity to immediate flight or abandonment of habitat, as well as disruption of normal social patterns and resource use. In some cases, Nelson's bighorn sheep have become acclimated to quarrying activities. For example, in local resident Nelson's bighorn sheep the northern San Bernardino Mountains have become acclimated to limestone quarrying and make regular use of inactive quarries and even active quarries during inactive hours (personal observations and communications with quarry staff by Scott D. White).

There are several research publications on Nelson's bighorn sheep activity in the vicinity of mining operations. None of these papers addresses PBS; however the following three address Nelson's bighorn sheep populations in arid habitats in California or Arizona that are comparable to the Plaster City Quarry site. The summary that follows is based on these three publications, particularly the discussion by Bleich and coauthors (2009), which is the most recent of the three, comparing and contrasting their own study results with the others and with broader Nelson's bighorn sheep literature.

- Panamint Mountains, California (Oehler et al., 2005)
- Silver Bell Mountains, Arizona (Jansen et al., 2007)
- San Bernardino Mountains, California (Bleich et al., 2009)

Bleich and coauthors (2009) state that "the characteristic that best defines mountain sheep habitat is the presence of escape terrain," and that many habitat studies have found that juxtaposition of escape terrain with valuable water or food sources has been important. They identify potential mining-related habitat benefits and deterrents, as follows: Mining can enhance escape terrain by removing vegetation (i.e., improving visibility) and creating steeper topography, especially if the improved escape terrain is near valuable food or water sources. However, mining-related disturbance could outweigh the benefits of improved escape terrain if it causes sheep to avoid the quarry areas. They found that Nelson's bighorn sheep in the San Bernardino Mountains limestone mining areas generally avoided roads (human disturbance) but did not avoid mined areas and in fact favored them over random locations.

Bleich and coauthors (2009) cite several publications indicating that Nelson's bighorn sheep can habituate to disturbance, and are frequently observed on or near active mines, stating "we speculate that such disturbance is of minimal concern to sheep when it is consistent in nature and occurs in highly predictable locations." In the Panamint Mountains study, Oheler and coauthors found that proximity to active mining did not affect home ranges, diet composition, or demographic indices, and that Nelson's bighorn sheep activity in the mining area was not affected by frequency of blasting or mine productivity.

The USFWS designated critical habitat for PBS in 2009. Much of the proposed quarry expansion area, as well as the southern and western currently active quarry areas, are within designated critical habitat (see Figure 4, Peninsular Bighorn Sheep Critical Habitat). In its critical habitat designation (2009), the USFWS described "primary constituent elements" (PCEs) essential to the conservation of Peninsular bighorn sheep. The 5 PCEs are paraphrased below:

- Moderate to steep, open slopes and canyons, that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups;
- Presence of a variety of forage plants, including shrubs that provide a primary food source year-round, grasses, and cacti that provide a source of forage in the fall, and forbs that provide a source of forage in the spring;

- Steep, rugged, slopes (60 percent slope or greater) that provide secluded space for lambing and terrain for predator evasion;
- Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation, and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resource areas (e.g., foraging areas and escape terrain); and
- Intermittent and permanent water sources that are available during extended dry periods and provide relatively nutritious plants and drinking water.

On the whole, the USG claims and the surrounding slopes and canyon provide all PCEs identified above. Intermittent or permanent water is available from a natural rock tinaja water source located in the Fish Creek Mountains south of the quarry area. Several additional water sources are located about one to three miles west of the quarry area, within Anza Borrego Desert State Park (Colby and Botta, 2017). Open slopes and canyons, as well as steep rugged slopes, are largely found above or in between the active quarry areas and the gypsum deposits proposed for future quarrying. Alluvial fans and washes, recognized as important foraging areas, are found throughout the area, including the large unnamed alluvial wash where below-grade quarrying would occur.

The Plaster City Quarry expansion would take place on two landforms: gypsum outcrops located above the level of the alluvial wash, and below-grade gypsum deposits, located beneath the alluvial wash. The planned expansion areas are located within larger claims, which also include more extensive upland and alluvial topography. In terms of the PCEs, the gypsum outcrops provide limited habitat value because of their sparse vegetation cover and minimal plant species diversity (predominantly desert fir, which is not identified as a PBS food plant). In addition, the surfaces of the undisturbed outcrops are covered by a crusted clay material that collapses underfoot, possibly affecting its habitat value for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups (the first PCE).

The existing alluvial wash habitat located in the expansion areas planned for below-grade mining provides the high diversity of food plants identified in the second and fourth PCEs and may provide habitat connectivity within the canyon (per the fourth PCE), although most evidence of PBS movement in the area is found on the steep slopes and ridges, rather than in the canyon.

CDFW conducts regular monitoring of radio-collared Peninsular bighorn sheep throughout the area. The annual reports identify several “ewe groups” within each Recovery Region; each ewe group comprises a few adult female Peninsular bighorn sheep and their offspring. There are four identified ewe groups in Recovery Region 8 (Colby and Botta, 2017). The Plaster City Quarry is located between the mapped home ranges of Vallecito Mountains ewe group and the Fish Creek Mountains ewe group. Suitable and occupied PBS habitat occurs to the west, northwest, south, and east of the USG Quarry site, but not to the north. CDFW radio collar data provided by R. Botta (see Figure 5, Fish Creek Mountains Radio Collared Ewe Locations) show numerous PBS occurrences around the Plaster City Quarry, around Split Mountain (west of the quarry) and the Fish Creek Mountains (east, south, and southeast of the quarry). Ewes with young lambs have been reported within about 1 mile of the project area.

The existing quarry and planned expansion areas are located along the eastern (Phases 1 through 10) and western (Phases S1, S2, and S3) slopes above a broad alluvial wash between the home ranges of two ewe groups whose core ranges are in the steeper mountains to the east and west. The two home ranges are in steep topography above the active quarry and planned expansion areas. At the narrowest point the overlap where the two ewe groups share territories (and, thus, biological connectivity) is about 4,000 feet wide, ranging in elevation between about 800 and 1,800 feet above MSL, with a few peaks above 2,100 feet above MSL. The existing quarry and planned expansion may limit potential east-west movement across the canyon, although the animals seem to avoid the canyon floor (even to the south of the active quarry area). Proposed quarry development would not prevent continued geographic contact between the two ewe groups south of the planned quarry areas.

Peninsular bighorn sheep give birth mainly in late winter through early spring (February - April). Lambing is the period from one month before birth until weaning (at about 4 to 6 months of age). Births can occur over much of the winter or spring, so lambing activity can extend from January through August, but lambing season is generally identified as the period from 1 January through 30 May. During pregnancy and lactation, ewes require high-protein forage, as found on deeper more productive soils of alluvial fans and canyon bottoms but retreat to better escape terrain late in pregnancy and to give birth. Lambing areas are associated with ridge benches or canyon rims adjacent to steep slopes or escarpments. The Fish Creek Mountains surrounding the Project site provide suitable habitat components for lambing habitat and appear to be used by radio-collared females (ewes) during lambing season.

Peninsular bighorn sheep also occasionally move across valleys (not generally considered suitable habitat for most activities) between disjunct habitat areas. These movements can supplement small sub-populations with new members and provide for gene flow among multiple small groups. This pattern of partially-isolated sub-populations with occasional demographic and genetic movement among them is known as a metapopulation. The proposed project would not prevent long-distance movement among distant sub-populations.

Peninsular bighorn sheep have been observed, albeit infrequently, at the existing quarry site and the proposed quarry expansion areas. During biological surveys conducted for this report, Peninsular bighorn sheep sign such as tracks, scat (feces), and “beds” (i.e., cleared areas for resting or sleeping) were commonly observed on upland slopes above the proposed quarry expansion areas, especially near the southern end of the proposed quarry areas, and less often observed in the unnamed alluvial wash. Skeletal remains of an apparent bighorn sheep were also observed near the southern end of the proposed quarry areas (Figure 3). Peninsular bighorn sheep tracks were also observed commonly near the active quarry area in 2014, following a year of heavy rainfall and subsequent ponding within the quarry. Due to the ponding, USG pumped water from the quarry, and multiple sheep tracks indicated the animals had repeatedly crossed the wide wash (from the west) to reach the water discharge. California Department of Parks and Recreation unpublished data also include Peninsular bighorn sheep occurrences in the Project area: sign was observed in the Shoveler claims area on the west part of the Project site, and at the narrow-gauge rail line where a sheep evidently crossed from west to east north of the USG processing area, and went into the Fish Creek Mountains above the existing Quarry. Finally, a Peninsular bighorn sheep was documented on the USG Project site in 2006. In early August, quarry staff saw an animal in the Shoveler claims area at the west part of the Project site; over the next few days, it was seen twice more near the processing area (though the workers did not get good views). Finally, on August 7, 2006, the remains of a dead immature male Peninsular bighorn sheep were found at the Shoveler claims area. The USG Quarry Manager contacted Anza-Borrego Desert State Park. A Park officer investigated the site and disposed of the remains. There was no evidence of predation (e.g., by mountain lion) or major injury and the cause of death is unknown.

The CDFW has only recently begun to understand ewe group structure and seasonal movements within the Fish Creek Mountains (FCM). CDFW observed 15 PBS, including 1 lamb, 1 yearling ewe, 6 ewes and 4 rams in the FCM during the 2016 aerial survey. However, during more recent ground telemetry monitoring upwards of 30 sheep have been observed.

There is no abundance estimate for the FCM ewe group alone. Because PBS move between the Fish Creek Mountains and Vallecito Mountains by way of Split Mountain, CDFW's surveys of the two mountain ranges are combined. For the 2016 aerial survey the total Vallecito and FCM adult ewe estimate was 79, the adult ewe/yearling ewe estimate was 101 and the adult and yearling ewe and ram estimate was 163. Given the increase in the PBS population over the last 10+ years and CDFW's improved understanding of ewe group structure, CDFW hopes to estimate PBS abundance by individual ewe groups. Doing so will depend on funding availability.

To date, CDFW has data from 3 GPS-collared ewes. Thus far, the core use area is in a large north-south running drainage on the eastern side of the Fish Creek Mountains (east of the ridgeline above the USG quarry). As of 2017 the distribution and movement patterns had not changed significantly in the Vallecito and FCM ewe groups.

There are only a few known water sources within the Fish Creek Mountains, including the north/south trending canyon at the northeast end of the FCM ewe group's home range. In summer 2016, the lower tinaja was checked and found to be dry; however, CDFW GPS data show this canyon to be the most heavily used during the summer months. As of 2017, numerous tinajas in the FCM have been dry for the past few years (prior to above-average rainfall in 2019). If recurring drought conditions continue these water sources may no longer meet the needs of PBS within FCM and water enhancement projects may be warranted.

In summary, CFDW's monitoring efforts indicate two potential mitigation opportunities proposed action. First, additional funding for the monitoring project could lead to a more complete understanding of the FCM ewe group's numbers, habitat usage, and relationship to USG quarry activities. Second, a supplemental water source could improve habitat conditions during recurring drought years.

Swainson's hawk (*Buteo swainsoni*). Swainson's hawk is a listed as Threatened by CDFW and is recognized as sensitive by the BLM. It is a hawk that preys on small mammals, birds, large insects, reptiles, and amphibians. Swainson's hawks usually hunt from perches such as fence posts and low trees, or from vantage points on the ground. This species is most commonly found over open plains and prairies in the Great Plains and relatively arid areas of western North America. It builds rather flimsy nests in shrubs and trees along wetlands and drainages and in windbreaks in fields and around farmsteads. They nest in the San Joaquin, Owens, and western Antelope Valleys of California. The primary wintering grounds for this species is in Argentina. They migrate through southern California every spring and fall. Suitable foraging habitat for this species is present throughout the Project area.

Barefoot banded gecko (*Coleonyx switaki*). This summary is based on reviews by Stebbins (2003) and CDFG (2005). The barefoot banded gecko is a state-listed threatened species and a BLM sensitive species. It is not listed under the federal ESA. Its documented geographic range extends from San Diego and Imperial counties south to central Baja California, Mexico. It occurs in rock outcrops and boulder-strewn slopes and canyons. It is rarely observed because of its steep, poorly accessible habitat, and because it spends most of its time in rock crevices or below ground. Due to its behavior and inaccessible habitats, its range in southern California may be more extensive that shown by documented occurrences. For example, Stebbins (2003) reported it as far north as State Highway 74 in the Santa Rosa Mountains, Riverside County. The nearest known occurrences to the USG Project Site are within Anza Borrego Desert State Park and in the Coyote Mountains. The principle threats to barefoot banded gecko appear to be collecting live animals for the reptile hobbyist trade, and consequent habitat destruction (e.g., prying rock crevices apart). Barefoot banded gecko is unlikely to occur on the quarry site or pipeline alignments. The gypsum outcrops do not provide suitable boulders or crevices. The surrounding metamorphic rock outcrops and perhaps the alluvial wash may offer marginal habitat such as boulders and crevices. There is no suitable habitat on any of the pipeline project components. Barefoot banded geckos were not found during field surveys conducted or the 2008 Final EIR/EIS or during recent field surveys in a portion of the gypsum quarry conducted in compliance with Mitigation Measure 3.5-1e of the 2008 EIR/EIS (see Section V. B. 1. Adopted Biological Resource Mitigation Measures) and current CDFW survey protocol (CDFG, 2011).

Desert pupfish (*Cyprinodon macularius*). Desert pupfish are absent from the proposed Project site due to the absence of perennial surface water. However, desert pupfish occurs lower in the watershed, several miles downstream from the quarry. Critical habitat at San Felipe Creek, Carrizo Wash, and Fish Creek Wash and occupied habitat at San Sebastian Marsh are located about 7 miles northeast of proposed Quarry Well No. 3, 11 miles northeast of the Quarry, about 20 miles north of the Plaster City Plant, and about 24 miles north of the proposed wells near Ocotillo.

Historically, desert pupfish were widespread and common in shallow water of stream margins, marshes, springs, and slow-flowing reaches of major rivers in the lower Gila River and Colorado River watersheds in Arizona, California, Baja California, and Sonora Mexico. They are exceptionally hardy, surviving in a broad range of water chemistry and temperature regimes, but they are vulnerable to competition and predation by non-native species. The desert pupfish is endangered due to habitat loss and the introduction of non-native competitors and predators (e.g., *Tilapia*) into its habitat (Minckley et al. 1991; USFWS 1986; Moyle 2002). Dam construction on several of its river and tributary habitats in Arizona and on the Colorado River inundated some occurrences and dewatered others. Surface water diversions have eliminated habitat in some areas, and lowered water tables due to groundwater pumping and groundwater use by invasive shrubs (*Tamarix ramosissima*) have eliminated other occurrences (USFWS 1986, 1993; CDFG 2005). Agricultural pollution may threaten some occurrences. In California, desert pupfish populations persist in native populations, at San Sebastian Marsh and upstream in San Felipe Creek and tributaries (Imperial County), at Salt Creek (Riverside County), and in shoreline pools and irrigation ditches around the Salton Sea (USFWS 1993). They also persist in irrigation canals near the Salton Sea and in a few introduced “refugia” sites, including three in Anza Borrego Desert State Park.

The USFWS designated critical habitat for desert pupfish at San Sebastian Marsh and along portions of its tributaries, San Felipe Creek, Carrizo Wash, and Fish Creek Wash in Imperial County (USFWS 1986). In the critical habitat designation, the USFWS listed several activities that could adversely modify critical habitat, including withdrawal of water, either directly or indirectly, from San Sebastian Marsh. In addition, the USFWS (1993) published a Desert Pupfish Recovery Plan with recommendations for land management and recovery.

BLM Sensitive Species

Flat-tailed horned lizard (*Phrynosoma mcalli*). The flat-tailed homed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. The flat-tailed horned lizard has been proposed for federal listing several times but in each case the USFWS determined that listing was not warranted (USFWS, 2011b). Although not federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003); its signatory agencies include the Bureau of Land Management and El Centro Naval Air Command. Together, these agencies manage several large reserves, including the West Mesa Management Area. A portion of the existing narrow-gauge rail line crosses the West Mesa Management Area (see Figure 1, Project Overview), but none of the project areas identified in this BRTR are located within it. The West Mesa Management Area is located approximately 2 miles north of the proposed replacement pipeline alignment and about 5 miles east of the proposed new pipeline alignment (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003).

The flat-tailed horned lizard's historic range extends throughout much of southeastern California, southwestern Arizona, northwestern Sonora and northeastern Baja California, Mexico. Populations are becoming isolated from one another by development. They occur almost exclusively in windblown sand dunes and partially stabilized sand flats. They overwinter by burying themselves in loose sand at depths to 8 inches (20 cm). They also bury themselves in sand to escape predators and to escape extreme high temperatures during their summer activity period (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003)

Flat-tailed horned lizard was not observed during the surveys. They were observed in the immediate vicinity of the proposed pipeline alignment in 2016 and 2017 (inaturalist 2018). They have a high potential to be present along both pipeline alignments and only a moderate potential to be present in the washes at the downstream end of the quarry.

The USFWS (2011b) determined that flat-tailed horned lizard populations within Management Areas are not low or declining and that most populations (with the exception of occurrences in the Coachella Valley) are not likely to become endangered in the foreseeable future. The USFWS evaluated the conservation efforts implemented under the Rangewide Management Strategy and recognized that these efforts reduce threats and "promote actions that benefit the flat-tailed horned lizard throughout its range." The USFWS states that "there is no information to suggest that the flat-tailed horned lizard population is declining or is in danger of becoming an endangered species in the foreseeable future."

Colorado Desert fringe-toed lizard (*Uma notata*). Colorado Desert fringe-toed lizard is recognized as a sensitive species by the BLM and is a CDFW Species of Special Concern. It lives in fine, loose, wind-blown sand, primarily in desert dunes and sandy washes. Their range in California includes the Sonoran Desert from Anza Borrego State Park to the Arizona and Mexico borders in Imperial and San Diego counties. Suitable windblown habitat is present along both pipeline alignments. There are recent records of Colorado Desert fringe-toed lizard within about 5 miles of the proposed pipeline (inaturalist 2018). It has the highest potential for occurrence along the proposed pipeline where the habitat is intact and has relatively little disturbance. There is minimal suitable habitat and very few records near the existing pipeline, therefore it has a low potential to be present. No suitable habitat is present within quarry.

Golden eagle (*Aquila chrysaetos*). Golden eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA), recognized as sensitive species by the BLM, and considered a fully protected species by CDFW. They are year-round residents throughout most of their range in the western U.S. In the southwest, they are more common during Winter when eagles that nest in Canada migrate south into the region. They breed from late January through August, mainly during late Winter and early Spring in the California deserts. In the desert, they generally nest in steep, rugged terrain, often on sites with overhanging ledges, cliffs, or large trees that are used as cover. Golden eagles are wide-ranging predators, especially outside of the nesting season, when they have no need to return daily to tend eggs or young at their nests. Foraging habitat consists of open terrain including grasslands, deserts, savanna, and early successional forest and shrubland habitats. They prey primarily on rabbits and rodents, but will take other mammals, birds, reptiles, and some carrion.

Golden eagle home ranges in the Mojave Desert ranged from 1.7 to 1,369 square miles, and averaged 119 square miles (Braham et al., 2015). In any given year, eagles may initiate nesting behavior at one nest, without any activity at the other nests. Eagles may complete breeding by laying eggs and raising chicks, or may abandon the nest without successfully raising young. In any given year, all or most nests in a territory may be inactive, but eagles may return in future years to nest at previously inactive sites.

Marginally suitable nesting habitat is present within the Project area and there is a low potential for nesting. Numerous cliffs were observed within 0.5 miles of the Project area, and are likely to provide suitable nesting habitat. Suitable foraging habitat is present throughout the Project area and there is a high potential to golden eagles to forage throughout.

Burrowing owl (*Athene cunicularia*). Burrowing owl is a CDFW Species of Special Concern and recognized as sensitive by the BLM. It inhabits arid lands throughout much of the western U.S. and southern interior of western Canada (Poulin et al., 2011). In this portion of its range, some owls are migratory, while some are year-round residents. Burrowing owls prefer flat, open annual or perennial grassland or gentle slopes and spare shrub or tree cover. However, they are routinely found in desert shrub communities, including those that are present in the Project area. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering habitats. Burrowing owls often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al., 2008). The breeding season in southern California generally occurs from February to August with peak breeding activity from April through July (Poulin et al., 2011).

A single burrowing owl was observed during surveys of the Project area in October 2014. Given the timing of the survey and that the owl was unpaired, this was likely a dispersing or wintering individual. Subsequent surveys of the Project area conducted during the breeding season did not detect any burrowing owls. However, suitable burrowing owl nesting habitat and foraging habitat is present throughout the Project area. This species is considered to have moderate potential to nest in the Project area.

Bats. Five special-status bat species recognized as sensitive by the BLM have at least a moderate potential to forage over the Project area: California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), and Western mastiff bat (*Eumops perotis californicus*). Pocketed free-tailed bat (*Nyctinomops femorosaccus*) also has at least a moderate potential to be present but is not recognized by the BLM as sensitive but is recognized as a CDFW Species of Special Concern. The pallid bat, Western mastiff bat, and California leaf-nosed bat forage in open areas over grasslands, agricultural areas, and other shrublands and roost in a variety of habitats including buildings, rock crevices, and caves (Harvey et. al., 2011). Townsend's big-eared bat roosts primarily in caves and abandoned mines (Harvey et. al., 2011). The spotted bat forages on moths in the desert during winter months and roosts in deep crevices in cliffs (CDFW 2018). The gypsum cliffs and other cliffs and outcrops immediately adjacent to the quarry provide suitable roosting habitat for most of these species. In addition, the entire Project area provides suitable foraging habitat for these bats.

Other Special-status Wildlife

Loggerhead shrike (*Lanius ludovicianus*). The loggerhead shrike is a CDFW Species of Special Concern. It is a widespread species in the United States and throughout California. It prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. It most often occurs in open-canopied forest and woodland habitats. It nests in well-concealed microsites in densely foliaged trees or shrubs (Miller, 1931; Bent, 1950). It feeds on large insects, but will also take small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. Loggerhead shrikes often impale their prey on thorns, barbed wire, or other sharp objects. Loggerhead shrike was present within the quarry during nesting season and likely nested there. It has a high potential to be present along the pipeline alignments.

Black-tailed gnatcatcher (*Polioptila melanura*). The black-tailed gnatcatcher is recognized as a watch list species by CDFW. It is a small song bird that nests in desert shrublands, typically in areas with thickets of mesquites, palo verdes, or acacias. They occur from the deserts of southern California east through Texas and south into Mexico. Black-tailed gnatcatchers were observed nesting within the quarry during surveys in the spring of 2016. They were nesting in habitat mapped as catclaw acacia thorn scrub. Suitable nesting habitat is present throughout the Project area with the highest potential for occurrence within the quarry and along the proposed pipeline.

American badger (*Taxidea taxus*). American badger is a CDFW Species of Special Concern. Badger natural history is summarized by Brehme et al. (2012). They were once widespread throughout open grassland habitats of California. They are now uncommon, permanent residents throughout most of the State. They are found in open shrubland, forest, and herbaceous habitats with friable soils. In the southwest, badgers are typically associated with creosote bush and sagebrush shrublands. Badgers are fossorial, digging large burrows in dry, friable soils and use multiple dens and cover burrows within their home range. Badgers move among burrows daily, although they can use a den for a few days at a time. Badger home range sizes are dependent upon prey availability and other habitat characteristics. In general, home ranges are several hundred acres in size. They feed mainly on small mammals, especially ground squirrels, pocket gophers, rats, mice, and chipmunks. Badgers also prey on birds, eggs, reptiles, invertebrates, and carrion. The diet shifts seasonally and yearly depending upon prey availability.

The gypsum outcrops and the alluvial areas of the planned quarry expansion areas provide unsuitable or poorly suitable habitat for digging and burrowing (the gypsum outcrops consist of bedrock overlain by relatively thin layers of weathered, clay-like gypsum material; the alluvium has very high rock content). The two pipeline routes provide suitable burrowing substrates, although their proximity to roads, OHV activity, and the narrow-gauge rail line may dissuade badgers from using those areas. No American badger or its sign was observed during the surveys. Suitable foraging habitat is present throughout the Project area and badgers have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Desert kit fox (*Vulpes macrotis arsipus*). Desert kit fox is protected under Title 14, Section 460, California Code of Regulations, as well as the California Fish and Game Code (Sections 4000-4012), which defines kit fox as a protected furbearing mammal. Both regulations prohibit take of the species. Desert kit fox is an uncommon to rare permanent resident of arid regions of southern California. Kit fox occur in annual grasslands, or grassy open, arid stages of vegetation dominated by scattered herbaceous species. Kit fox prey on rabbits, ground squirrels, kangaroo rats, and various species of insects, lizards, and birds (Zeiner et al., 1990). Desert kit fox is primarily nocturnal, and inhabits open, flat areas with patchy shrubs. Friable soils are necessary for the construction of dens, which are used throughout the year for cover, thermoregulation, water conservation, and pup rearing.

No kit fox or kit fox sign was observed during the surveys. As described above for American badger, suitable foraging habitat is present throughout the Project area and kit foxes have a moderate to high potential to occur occasionally, but relatively low probability of denning in the Project area.

Prairie falcon (*Falco mexicanus*). Prairie falcon is a watch list species in California. It breeds throughout much of arid western North America. They prey on a variety of small mammals, birds, reptiles, and some large insects. They nest almost exclusively on ledges of cliffs and rock escarpments or, occasionally, in stick nests built on the ledges by ravens or other raptors. There are a few regional breeding records (e.g., at Anza-Borrego Desert State Park [Unitt, 1984]) and nesting prairie falcons may forage over very wide ranges (Johnsgard, 1990). Almost all prairie falcon sightings in the region are made during winter or migration seasons. Suitable nesting habitat is present in the Project area and they have a moderate potential to utilize the habitat. They are likely to occasionally forage within the Project area.

Other Raptors: Several special-status birds of prey are found seasonally in the region, especially during winter and migration: sharp-shinned hawk (*Accipiter striatus*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), and merlin (*Falco columbarius*). Suitable winter or migratory season foraging habitat for these raptors is widely available throughout the region. These species, if present, may forage within the Project area but would not nest because of a lack of suitable habitat.

Native birds. Most birds, including their nestlings and eggs, are protected under the California Fish and Game Code Sections 3503, 3503.5, and 3513, and the federal Migratory Bird Treaty Act. Most of these species have no other special conservation status. Fifteen bird species have been recorded on the site during field surveys (see Attachment 4). Suitable foraging and nesting habitat for protected bird species, as well as “stopover” habitat for migratory songbirds, is found throughout the project area.

V. Conclusions and Recommendations

V. A. Summary of Biological Resources Impacts

The proposed project would directly affect vegetation, habitat, and common species within the project footprint areas, and may directly affect special-status plants or animals. In addition, the project may indirectly affect biological resources in the vicinity of the project footprint, through noise, lighting, disturbance, dust, or other indirect effects. The following paragraphs briefly summarize the expected impacts to biological resources, and several mitigation measures are recommended in the sections that follow.

V. A. 1. Vegetation and Habitat Impacts

Expanded quarrying activities would result in permanent and long-term impacts to native vegetation and habitat (see Table 2). Pipeline construction would affect additional acreage. During quarrying or pipeline construction activities, most wildlife are expected to avoid the project footprint area and immediate vicinity due to unsuitable habitat conditions and human disturbance. After the completion of quarrying or construction activities, vegetation and habitat will remain in a disturbed state for many years, although removal of the disturbance and subsequent recovery (through reclamation) will ultimately replace some habitat components. Quarry phasing and on-site reclamation as specified in the Imperial County authorization would reduce the habitat impacts over time, and measures recommended below would minimize the project footprint area. In addition, habitat effects could be offset through any habitat compensation that may result from permitting for jurisdictional waters impacts through the US Army Corps of Engineers or CDFW, or federal ESA consultation with the USFWS. Project activities could lead to the spread of invasive weeds or introduction of new weed species in the area.

Mitigation measures to avoid or minimize general vegetation and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR 3.5-1a. Revegetation
- EIR 3.5-1b. Phasing of Quarry development and closure
- BIO-1. Integrated Weed Management Plan

- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program

V. A. 2. Special-status Plant Impacts

No State or federally listed plants and no BLM Sensitive Plants were observed during the surveys or have potential to be present. Several special-status plants with a CRPR 2B (rare in California but more common elsewhere) or CRPR 4 (watch list) were observed in the quarry expansion areas or new pipeline route. The proposed project would probably take small occurrences of Thurber's pilostyles, brown turbans, Coulter's lyrepod, and annual rock-nettle. Based on the distribution and conservation status of these species and extensive undisturbed ad protected habitat in the surrounding area, this impact would be relatively minor and no mitigation is recommended.

V. A. 3. General Wildlife Impacts

Most wildlife would avoid moving equipment, and equipment operators would avoid clearly visible wildlife (such as large mammals). However, quarrying or pipeline construction could cause mortality of small mammals and reptiles within the project footprint area, particularly during initial grading or site clearing work. Food or water could attract wildlife into the work area, putting animals at risk of injury. Domestic or feral dogs, if present on the site, could prey on native wildlife, or cause injury or mortality by chasing animals. Other potential hazards include vehicle strikes or wildlife entrapment within bores, trenches, or materials (e.g., pipes). The project footprint and surrounding area provide suitable nesting habitat for numerous resident and migratory birds, which may be vulnerable to project activities. Most adult birds would flee from equipment during initial vegetation clearing; however, nestlings and eggs would be vulnerable to mortality during initial site clearing construction, and are also protected by the MBTA and Fish and Game Code. These potential impacts can be minimized or avoided through scheduling initial site disturbance outside the nesting season. One special-status bird species, the burrowing owl, is unlikely to flee the site during construction, due to its characteristic behavior of taking cover in burrows. An avoidance and mitigation strategy for burrowing owl is recommended. In addition, certain bird species can become entrapped in vertical or horizontal open pipes with diameters from 1 to 10 inches. Cavity-nesting species such as Say's phoebes, owls, woodpeckers, kestrels, and ash-throated flycatchers are particularly vulnerable. Several avoidance and minimization measures, as well as pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid these potential impacts.

The quarry expansion and pipeline construction could affect local wildlife movement patterns. Quarrying and construction operations would tend to dissuade most terrestrial animals from crossing the site due to the removal of vegetation and soil which would otherwise provide food, shade, burrowing substrate, and most other native habitat elements. Indirect impacts, including light, noise, and equipment traffic, could also tend to reduce wildlife dispersal across the property. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed quarry operations, and the short-term nature of pipeline construction would have only minimal effects to local wildlife movement. Potential impacts to wildlife movement would be minor and no mitigation specific to wildlife movement is recommended, although avoidance and minimization measures recommended below would serve to minimize potential impacts to local wildlife movement.

Mitigation measures to avoid or minimize general wildlife and habitat impacts are listed below. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-4. Domestic Animals
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. A. 4. Special-status Wildlife Impacts

The proposed project could directly or indirectly affect special-status wildlife through injury or mortality or through habitat loss or degradation described above. With implementation of avoidance measures recommended below, the project is not expected to take[2] Peninsular bighorn sheep, desert kit fox, America badger, barefoot banded gecko, nesting birds (including burrowing owl) or other special-status wildlife. The planned quarry expansion areas are within designated PBS critical habitat, and the project would directly affect critical habitat, although the planned expansion areas show little evidence of PBS usage. Initial site clearing activities could cause take of special-status reptile (e.g., flat-tailed horned lizard), bird (e.g., burrowing owl), or mammal (e.g., American badger) species if the animals or their active nests or dens are present during the clearing; however, avoidance measures identified below would prevent take. A hydrology analysis indicates that the project would not affect off-site desert pupfish habitat (Bookman-Edmonston 2002a, 2002b). Pre-construction clearance surveys and clearly-delineated work areas are recommended below to minimize or avoid direct impacts. In addition, habitat effects could be offset through any habitat compensation that may result from federal ESA consultation with the USFWS. Note that any habitat compensation for PBS may also provide suitable nesting or foraging habitat for one or more other special-status species of the area, depending on specific habitat characteristics. Potential impacts are described further for each special-status species in the paragraphs that follow.

Peninsular bighorn sheep. Potential project impacts to PBS are categorized below, into habitat impacts, potential for injury or mortality, disruption of behavior, interruption of access to foraging areas, reproduction and lambing activities, and habitat fragmentation and connectivity.

The project would affect suitable and occupied PBS habitat located adjacent to the existing disturbance area and would occur in phases over the 73-year mining authorization (80-year estimate for mining and final reclamation). In general, mining will proceed from currently active quarry areas in the north toward future phases in the south. Site-specific mining will depend on multiple factors such as gypsum characteristics in various parts of the quarry, blending needs for production, and market conditions. This total habitat effect is diminished because (1) quarry areas would be reclaimed after completion of mining in each area, so that the previously mined areas would be under reclamation as new areas are developed and mined; (2) former quarry areas, even without reclamation, can serve several habitat values for PBS, including escape terrain, sheltering, and bedding; (3) the habitat value of upland gypsum outcrops appears to be relatively low, based on PBS location data (Figure 5), probably due to minimal forage availability and

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[2] Under the California Fish and Game Code, " 'take' means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." As a state-designated Fully Protected species, no project-related take of Peninsular bighorn sheep is permitted under California law. Under the federal Endangered Species Act, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." 'Harass' and 'harm' (not included in the state definition) are further defined in federal regulations as activities, including significant habitat impacts, that are likely to kill or injure wildlife by significantly disrupting or impairing normal behavior patterns such as breeding, feeding, and sheltering, The US Fish and Wildlife Service may authorize take of a federally listed wildlife species through Endangered Species Act Section 7 consultation with BLM.

crusted clay surface; and (4) excluding the gypsum outcrops, habitat (e.g., topography and vegetation) in the planned quarry expansion area is similar to habitat throughout Recovery Region 8 (USFWS 2000b); there are no known special habitat resources such as surface water sources or lambing areas within the active planned quarry expansion areas.

Future quarrying would directly affect two habitat types: upland gypsum outcrops and alluvial wash. The upland gypsum outcrops appear to have minimal habitat value, based on vegetation, topography, soil conditions, and PBS location data. The alluvial wash habitat likely supports higher-quality PBS forage, although it is mostly not adjacent to escape terrain due to presence of gypsum outcrops located between the alluvial wash and the upslope escape terrain. PBS locations indicate only infrequent occurrence in the alluvial wash areas. Mining activities would remove forage plants and other habitat components from the alluvial mining areas, and would significantly alter the outcrop quarry areas, possibly creating steep slopes and benches that may serve as escape terrain (Bleich et al., 2009). The total area of planned disturbance to the alluvial wash is approximately 400 acres, mapped primarily as creosote bush scrub, creosote bush – white bursage scrub, catclaw acacia thorn scrub, and smoketree woodland. Upon completion of mining, each below-grade quarry area will be reclaimed to a condition suitable for use as foraging. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS habitat.

The potential PBS direct habitat impacts would be minimized, offset, or reduced over time primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- BIO-1. Integrated Weed Management Plan
- PBS-1. Peninsular Bighorn Sheep Habitat Mitigation

Mining and reclamation have little potential for causing direct injury or mortality to PBS. There exists a possibility of transportation accidents (truck and train) as well as blasting accidents. Truck and train traffic and blasting have occurred on the site since 1921 (the mine has been in continuous operation by USG since 1945) and these activities are visible to PBS from sufficient distances to allow avoidance by PBS. Given the apparent avoidance of active quarry areas by PBS, the probability of injury or death is small. In addition, if the project were to attract or introduce domestic livestock or feral dogs to the site, those animals could either transmit livestock diseases to PBS, or prey on PBS.

The potential for injury or mortality would be minimized or avoided primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures (including 15 mph speed limit)
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Human presence, lighting, dust, construction noise, blasting, noise and vibrations from heavy equipment, may affect PBS behavior in the quarry vicinity. Quarry noise or disturbance impacts may cause PBS to avoid upland habitat adjacent to the planned mining areas that PBS currently use as escape terrain, foraging, or movement among local ewe groups. A number of studies have been conducted to evaluate bighorn sheep responses to human activities (e.g., Hicks and Elder 1979; Keller and Bender 2007; Papouchis et al. 2001) and generally conclude that bighorn sheep increase their distance to humans, especially when they are approached, but the effects of disturbance are temporary. Additionally, PBS appear to acclimate to ongoing activities such as mining (Bleich, 2009 and references cited therein) and fluctuating levels of mining activity, including blasting, did not appear to affect Nelson's bighorn sheep in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009).

Urban Crossroads (2018) prepared a study of quarrying noise at the USG Plaster City Quarry, consisting of long-term (one-hour) measurements from several locations in the existing and planned quarry areas, short-duration noise levels within short distances of quarrying equipment, and short-duration measurement of blasting noise. Urban Crossroads recorded operational levels ranging from 30.8 dBA[3] near the southern end of the planned quarry expansion (about 2 miles from the current activity) to 47.7 dBA in the vicinity of ongoing operations where background noise sources include electrical equipment, people talking, truck engines starting, truck movements, and truck horns sounding for safety purposes. These correspond to faint (below 40 dBA) or moderately loud (above 40 dBA) levels. Short-duration measurement of equipment noise, such as truck pass-by, truck unloading, and crusher activity ranged from 67.7 dBA to 88.2dBA at 50-foot distances, corresponding to loud or very noisy levels. Blasting measured over a 1-second duration registered 128.7 dBZ[4] at a distance of 425 feet, corresponding to 134.9 dBZ at a standard 50-foot distance.

The most likely behavioral response by PBS will be to temporarily avoid active quarrying or materials processing areas, including nearby undisturbed habitat. PBS location data include many data points in the immediate vicinity of the active quarry area, consistent with literature reports indicating acclimation to quarrying activities including blasting. Under the Proposed Action, quarry production and quarrying activities may increase. The Urban Crossroads analysis indicates only a minimal increase in overall noise levels from increased quarry production. Consistent with the behavior of Nelson's bighorn sheep as quarry production increased and decreased in the Panamint Mountains (Oehler et al. 2005; Bleich et al. 2009), the level of overall disturbance to PBS is not expected to change. The new pipeline construction is unlikely to affect PBS behavior due to the location along the existing narrow-gauge rail line, where PBS occurrence is rare. If PBS are in the vicinity during construction, then the construction activities would likely affect PBS behavior as described above for quarry activities. The pipeline replacement and canal pipeline components of the Proposed Action are not expected to affect PBS behavior because they would not be located in PBS occupied habitat.

The potential to disrupt PBS behavior would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

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[3] A-weighted sound level, from one-hour recording periods (Urban Crossroads, 2018).

[4] Non-weighted sound level (Urban Crossroads, 2018).

Mining and reclamation will disrupt portions of the site for at least 80 years, causing habitat loss, disturbance, and potential behavioral effects described above. Mining-related disturbance may cause PBS to avoid accessing foraging habitat within the alluvial wash, if the disturbance is located between regularly-used slope habitat and the alluvial foraging area. Nonetheless, extensive upland and alluvial habitat are available in the surrounding area. The potential extent of interrupted access to foraging areas in the vicinity of the quarry cannot be quantified. The new pipeline construction and pipeline replacement components of the Proposed Action are not expected to affect PBS access for foraging habitat.

The potential to interrupt PBS access to foraging habitat would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas.
- EIR-2. Mining and Reclamation.
- EIR-3. PBS Avoidance, Worker Training.
- EIR-4. Domestic Animals.
- BIO-2. Mining Activity Monitoring and Reporting
- BIO-3. Worker Education Awareness Program
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Peninsular bighorn sheep lambs and yearlings have been observed in the Fish Creek Mountains east of the quarry. Based on data indicating year-round PBS occupancy, lambing activity (i.e., birth and nursing) presumably occur in the Fish Creek Mountains. GPS location data suggest the most likely lambing area is the north-south trending canyon east of the quarry. Future quarry phases 6Bp, 7Bp, 8, and 9 are nearest to the presumed lambing habitat.

Although there are no expected impacts to reproduction and lambing activities, the project includes a requirement that new ground-disturbing activities (i.e., initial quarry development) and blasting may not take place during lambing season (Jan 1- May 30), except with the approval of USFWS and CDFW. This requirement is identified in:

- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Continuing and expanded quarry operations would tend to dissuade most terrestrial animals, including PBS, from crossing the active quarry areas. Future mining in the southern end of the planned quarry expansion areas (Phases 8 and 9) is near a habitat linkage between occupied habitat to the east and west of the planned quarry expansion area. This linkage is about 4,000 feet wide. Based on location data, PBS regularly use habitat immediately adjacent to the active quarrying areas (Phases 1A, 1B, S1, S2, and S3). Based on these activity patterns, PBS are expected to continue to occupy the upland slopes south of Phases 8 and 9. Quarry areas undergoing reclamation would be accessible to PBS, although their localized behavioral response to the previously active quarry areas is unknown. Nelson’s bighorn sheep populations in other areas regularly use inactive quarries for routine activities (Bleich, 2009; San Bernardino National Forest, 2014 and citations therein). Throughout the life of the project, surrounding undeveloped open space would continue to provide access to PBS throughout nearly all of the habitat currently in use by PBS. The new pipeline construction and pipeline replacement components are not expected to affect biological connectivity for PBS. Pipeline construction activities may temporarily dissuade terrestrial animals from using the area. But surrounding undeveloped open space would continue to provide adequate travel routes around the existing and proposed plant operations.

The potential to affect biological connectivity would be minimized primarily through implementation of the following measures. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR-1. Minimize Temporary Use Areas
- EIR-2. Mining and Reclamation
- EIR-3. PBS Avoidance, Worker Training
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting
- PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures

Desert pupfish. The project would not directly affect suitable aquatic habitat for desert pupfish. Desert pupfish occurs at San Sebastian Marsh, which is lower in the Fish Creek watershed, about 7 miles northeast of the nearest USG facilities. Potential effects of the project on desert pupfish, if any, would be indirect impact to surface water availability in off-site desert pupfish habitat.

Groundwater extraction was identified as a threat in the desert pupfish listing (USFWS, 1986) and in the recovery plan (USFWS, 1993). It is still considered a threat; especially at occurrences outside California (USFWS, 2010). The potential link between groundwater extraction and off-site aquatic habitat availability to desert pupfish depends on the rate or volume of extraction and groundwater passage within the affected basin or basins. Reduced groundwater level at a given well location could lead to reduced surface water at a spring or seep, depending on the amount of draw-down and the hydrologic link between the well site and the aquatic habitat.

Hydrologic studies prepared by Bookman-Edmonson (2002a; 2002b) and Dudek (2018) addressed the quarry area and proposed Quarry Well No. 3, indicating that neither component of the project would affect occupied pupfish habitat. These studies are described in the following paragraphs.

Hydrologists preparing the analysis have concluded that no impacts will occur to basin water supplies or to San Felipe Creek. The analysis shows a drainage area contributing to the San Felipe Creek of 965,388 acres with a volume calculated on annual average precipitation of 583,883 acre-feet of water. The Quarry, including the planned expansion area, contributes 396 acre-feet of water to the basin (0.07 percent by volume). This surface drainage would continue uninterrupted with all drainage from the Quarry directed to the wash.

Hydrogeologists also addressed the possible impacts of withdrawing approximately 26 acre-feet per year of well water from the same basin for use at the Quarry. A calculated draw down of the proposed well at maximum capacity would have a draw down at Fish Creek and San Felipe Creek Springs of approximately 1 millimeter. This is a conservative estimate because values produced by the Theis equation are for drawdowns in confined aquifers. However, the aquifer in the well area is unconfined, and drawdowns will be much less than those for a confined aquifer. Pumping 26 acre-feet per year from an unconfined aquifer will not produce drawdowns that are noticeable at distances of 1,000 feet or less. Additionally, the location of the San Jacinto Fault, a probable groundwater barrier between the well and Fish Creek and San Felipe Creek Springs, would most likely prevent a cone of depression extending beyond the fault. Thus, the extraction of water from the well at capacity will not have a detectable impact directly or cumulatively on habitat supporting the desert pupfish.

Additionally, recent significant loss of surface water in the occupied habitat is believed to be linked to seismic activity (Poff, 2017) or cessation of nearby irrigation due to conversion of agricultural lands to a solar facility (Todd Groundwater, 2018).

Barefoot banded gecko. The barefoot banded gecko is not expected to occur on the site. However, due to its cryptic nature and inaccessible habitats, it may be more widespread than currently understood. If barefoot banded gecko were to occur on a future mining site, potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Most potential impacts would be minimized through measures identified for general wildlife impacts (above). Due to its status as a CESA-listed threatened species and a BLM sensitive species, the following additional mitigation measure was included in the 2008 Final EIR/EIS. The full text of the measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- EIR 3.5-1e. Barefoot banded gecko

Flat-tailed horned lizard. Suitable habitat for flat-tailed horned lizard is present along several parts of the planned pipeline routes. Potential impacts would be similar to those described for general wildlife (above), especially the potential for injury or mortality by vehicle crushing. Although not state or federally listed, an interagency management strategy and conservation agreement for the flat-tailed homed lizard was established in 1997 and remains in place (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003). In order to minimize potential impacts to flat-tailed horned lizard, Mitigation Measure EIR 3.5-2was included in the 2008 Final EIR/EIS, and additional Mitigation Measure FTHL-1 is recommended. The full text of the measures may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy
- BIO-4. Wildlife Impact Avoidance and Minimization Measures
- FTHL-1. Flat-tailed Horned Lizard Mitigation

Special-status bats. Several special-status bats could forage over the site or possibly roost in rock crevices within planned quarry expansion areas. Impacts to foraging habitat would be minimal and would be mitigated through measures identified above under Vegetation and Habitat Impacts. Potential impacts to roosts could cause injury or mortality to special-status bats. This potential impact would be avoided or minimized through Mitigation Measure BIO-4 (Wildlife Impact Avoidance and Minimization Measures). The full text of BIO-4 may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

Desert kit fox and American badger. Both species could use the quarry or pipeline project areas, although they were not observed during field surveys. Potential direct impacts to American badger and desert kit fox include mechanical crushing of individuals or burrows by vehicles and construction equipment, habitat loss, and noise and disturbance to surrounding habitat. Mitigation measures identified under general wildlife impacts would minimize this potential impact.

Nesting birds including burrowing owl. Native birds are protected under the California Fish and Game Code and federal Migratory Bird Treaty Act. Special-status birds of the region are addressed in Section IV. D. but most protected bird species have no special conservation status. The entire Project site and surrounding area provides suitable nesting habitat for numerous resident and migratory bird species. Bird nests including eggs and nestlings are vulnerable to Project construction activities that may disrupt nesting behavior or damage nests, birds, or eggs. Burrowing owls reside in burrows year-round and may retreat into their burrows if threatened by human activities; therefore, burrowing owl avoidance requires pre-construction surveys and avoidance measure for occupied burrows at any time of year. Mitigation measures identified under general wildlife impacts, in combination with the measures identified below, would minimize potential impacts to nesting birds. The full text of each measure may be found in Section V.B (Existing and Recommended Biological Resource Mitigation Measures).

- EIR 3.5-1c. Migratory birds
- BO-1. Burrowing owl avoidance
- BIO-4. Wildlife Impact Avoidance and Minimization Measures

V. B. Existing and Recommended Biological Resource Mitigation Measures

The proposed project includes quarry reclamation in compliance with the California Surface Mining and Reclamation Act (SMARA). In addition, the Imperial County project authorization includes eleven measures to mitigate biological resources impacts, quoted in Section V.B.1. below. Aspen recommends several additional measures in Sections V.B.2. and V.B.3. to mitigate biological resource impacts, including several general avoidance and minimization measures and several additional measures for specific resources.

V. B. 1. Adopted Biological Resource Mitigation Measures

The following eleven measures are identified in the 2008 Final EIR/EIS and included as project requirements under the Imperial County authorization. These measures are still applicable and would reduce adverse effects identified herein. Additional mitigation measures are recommended in Sections V.B.2. and V.B.3. to supplement these adopted measures and further reduce biological resources impacts.

EIR-1. Minimize Temporary Use Areas. During pipeline construction the need for temporary use areas would be minimized by using the USG private parcels on either end of the alignment for staging and equipment and material storage. Materials would be transported to the project areas as needed, for immediate use.

EIR-2. Mining and Reclamation. Mining and reclamation shall be conducted only as approved in the Plan of Operation and Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the reclamation plan.

EIR-3. PBS Avoidance, Worker Training. The project proponent shall instruct employees and other visitors to the mine to avoid Peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. The project proponent shall establish a training program, including new-employee orientation and annual refreshers, to educate employees regarding bighorn sheep and the importance of avoidance.

EIR-4. Domestic Animals. The project proponent shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.

EIR 3.5-1a. Revegetation. Consistent with the California Surface Mining and Reclamation Act (SMARA), USG shall implement the revegetation plan. In general, revegetation should be designed to restore habitat and cover for wildlife use in conformance with SMARA. Revegetation should be concurrent with closure of individual Quarry areas; wherever ongoing Quarry operation may eliminate access to closed upper Quarry benches, those benches should be revegetated while access is still available.

EIR 3.5-1b. Phasing of Quarry development and closure. Wherever possible, USG shall begin revegetation of Quarry areas to restore native habitat values concurrently or in advance of opening new Quarry areas.

EIR 3.5-1c. Migratory birds. In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.

EIR 3.5-1d. Peninsular bighorn sheep. USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the USFWS that will: (1) provide a statement about whether the proposed project is “likely or not likely to jeopardize” the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

EIR 3.5-1e. Barefoot banded gecko. Suitable habitat occurs throughout much of the Quarry area. Prior to expanding existing quarries or developing new quarries, focused barefoot banded gecko surveys shall be conducted to determine whether the species is present or absent from any proposed new disturbance areas. Surveys would be carried out in cooperation with the CDFG [now CDFW] and field biologists would be required to hold Memoranda of Understanding with the CDFG to search for this species. If the species is present, then consultation with CDFG under Section 2081 of CESA to “take” barefoot banded gecko must be completed prior to land disturbance.

EIR 3.5-1f. Agency contacts for impacts to streambeds. Prior to any new disturbances on the alluvial wash portion of the project area, USG shall contact the CDFG and the US Army Corps of Engineers to determine whether either agency holds jurisdiction over the wash through Sections 1601-3 of the California Fish and Game Code or Section 404 of the Federal Clean Water Act, respectively.

EIR 3.5-2. Flat-tailed Horned Lizard Rangewide Management Strategy. USG will comply with the FTHL Rangewide Management Strategy, as revised, Standard Mitigation Measures when constructing Quarry Well #3 and the Quarry pipelines.

V. B. 2. Recommended General Avoidance and Minimization Measures

BIO-1. Integrated Weed Management Plan. USG will prepare and implement an integrated weed management plan to control invasive weeds including tamarisk and fountain grass in cooperation with the BLM and County of Imperial. The plan will include procedures to help minimize the introduction of new weed species, an assessment of the invasive weed species known within the project area, and procedures to control their spread on site and to adjacent offsite areas. This plan will be submitted to the BLM and County of Imperial for review and approval prior to the start of construction and will be implemented for the life of the project.

BIO-2. Mining and Construction Activity Monitoring and Reporting. Prior to the beginning of any quarry expansion activities, USG will identify a Designated Biologist and may additionally identify one or more Biological Monitors to support the Designated Biologist. The Designated Biologist and Biological Monitors will be subject to approval by the BLM and USFWS. The Designated Biologist will be in direct contact with BLM and USFWS.

The Designated Biologist or Biological Monitor will have the authority and responsibility to halt any project activities that are in violation of the conservation measures. To avoid and minimize effects to biological resources, the Designated Biologist and/or Biological Monitor will be responsible for the following:

- The Designated Biologist will notify BLM's Authorized Officer and Service at least 14 calendar days before the initiation of quarry expansion of new ground-disturbing activities.
- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys (see BIO-4, below) and will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity (see PBS-3, below).
- The Designated Biologist or Biological Monitor will immediately notify BLM's Authorized Officer and Service in writing if USG does not comply with any conservation measures including, but not limited to, any actual or anticipated failure to implement conservation measures within the periods specified.
- The Designated Biologist or Biological Monitor will visit the quarry site periodically (no less than once per month) throughout the life of the project to administer the WEAP and ensure compliance with the Impact Avoidance and Minimization Measures listed below, and
- The Designated Biologist will submit an annual compliance report no later than January 31 of each year to BLM's Authorized Officer throughout the life of the project documenting the implementation of the following programs/plans as well as compliance/non-compliance with each conservation measure:
    - Integrated Weed Management Plan
    - Worker Education Awareness Program
    - Reclamation Plan
    - Wildlife Mortality Reporting Program
    - Peninsular Bighorn Sheep Monitoring Plan

BIO-3. Worker Education Awareness Program. This measure supplements measure EIR-4, above, by expanding on the worker training program. Prior to project approval, USG will develop a worker education awareness program (WEAP), to be implemented upon final approval by BLM and USFWS. The WEAP will be available in English and Spanish. The WEAP will be presented to all workers on the project site throughout the life of the project. Multiple sessions of the presentation may be given to accommodate training all workers. Wallet-sized cards summarizing the information will be provided to all construction and O&M personnel. The WEAP will be approved by the BLM, Service, and CDFG, and will include the following:

- Descriptions of special-status wildlife of the region, including Peninsular bighorn sheep, and including photos and how to identify adult and subadult male and female PBS.
- The biology and status of special-status species of the area, including Peninsular bighorn sheep.
- A summary of the avoidance and minimization measures and other conservation measures.
- An explanation of the PBS observation log (see PBS-2), including instruction on correctly filing data.
- An explanation of the flagging or other marking that designates authorized work areas.
- Actions and reporting procedures to be used if any wildlife, including Peninsular bighorn sheep is encountered.

BIO-4. Wildlife Impact Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- To the extent feasible, initial site clearing for quarry expansion, pipeline construction, or other activities (e.g., clearing spoils stockpile areas) should be conducted outside the nesting season (January 1 through August 31) to avoid potential take of nesting birds or eggs.

- The Designated Biologist or Biological Monitor will conduct pre-construction clearance surveys no more than seven (7) days prior to initial site clearing for quarry expansion or pipeline construction. To the extent feasible, special-status wildlife (e.g., reptiles) will be removed from “harm’s way” prior to site clearing. If an active bird nest, including active burrowing owl burrows are present, the biologist will mark a suitable buffer area around the nest and project activities will not proceed within the buffer area until the nest is no longer active. If potential special-status bat roosting habitat is present (e.g., rock crevices) the biologist will check to see if bats are present. If an occupied bat roost is present, USG will confer with a bat specialist to determine if avoidance or pre-disturbance eviction is feasible or necessary.
- For project activities in windblown sand habitats on pipeline routes, the Designated Biologist or Biological Monitor shall be present in each area of active surface disturbance throughout the work day. the Designated Biologist or Biological Monitor will survey work areas immediately prior to ground-disturbing activities and will examine areas of active surface disturbance periodically (at least hourly when surface temperatures exceed 85ºF) for the presence of FTHL or Colorado fringe-toed lizard. In addition, all potential wildlife hazards (e.g., open pipeline trenches, holes, or other deep excavations) shall be inspected for the presence of FTHL or Colorado fringe-toed lizard prior to backfilling.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities (e.g., clearing spoils stockpile areas) and will be responsible for ensuring that no quarry expansion activities are conducted while Peninsular bighorn sheep are within a 0.25-mile radius of the activity.
- Speed limits along all access roads will not exceed 15 miles per hour.
- Avoid or minimize night lighting by using shielded directional lighting pointed downward, thereby avoiding illumination of adjacent natural areas and the night sky.
- The boundaries of all areas to be newly disturbed (including quarry expansion areas, staging areas, access roads, and sites for temporary placement of construction materials and spoils) will be delineated with stakes and flagging prior to disturbance. All disturbances, vehicles, and equipment will be confined to the flagged areas. The Biological Monitor will be on the site to ensure that no ground disturbing activities occur outside the staked area during initial quarry expansion or ground disturbance.
- Spoils will be stockpiled only within previously disturbed areas, or areas designated for future disturbance (including spoils areas designated in the Plan of Operations).
- No potential wildlife entrapments (e.g., trenches, bores) will be left uncovered overnight. Any uncovered pitfalls will be excavated to 3:1 slopes at the ends to provide wildlife escape ramps. Covered pitfalls will be covered completely to prevent access by small mammals or reptiles.
- To avoid wildlife entrapment (including birds) all pipes or other construction materials or supplies will be covered or capped in storage or laydown area, and at the end of each work day in construction, quarrying and processing/handling areas. No pipes or tubing of sizes or inside diameters ranging from 1 to 10 inches will be left open either temporarily or permanently.
- No anticoagulant rodenticides, such as Warfarin and related compounds (indandiones and hydroxycoumarins), may be used within the Project site, on off-site project facilities and activities, or in support of any other Project activities.
- Avoid wildlife attractants. All trash and food-related waste shall be placed in self-closing raven-proof containers and removed regularly from the site to prevent overflow. Workers shall not feed wildlife. Water applied to dirt roads and construction areas for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract wildlife. Pooled rainwater or floodwater within quarries will be removed to avoid attracting wildlife to the active work areas.

- Any injured or dead wildlife encountered during project-related activities shall be reported to the Designated Biologist, Biological Monitor, CDFW, or a CDFW-approved veterinary facility as soon as possible to report the observation and determine the best course of action. For special-status species, the Designated Biologist or Biological Monitor shall notify the BLM, USFWS, and/or CDFW, as appropriate, within 24 hours of the discovery.

In addition to these measures, Aspen recommends incorporating measures for noise management, dust control, hazardous materials management, erosion control, and water quality in the appropriate sections of the SEIS, to avoid or minimize potential effects of these environmental issues to biological resources.

V. B. 3. Recommended Species-specific Avoidance and Minimization Measures

The following additional measures are recommended to avoid, minimize, or offset project impacts to burrowing owl (BO) and Peninsular bighorn sheep (PBS).

BO-1. Burrowing owl avoidance. If an active burrowing owl burrow is observed within a work area at any time of year, the Designated Biologist or Biological Monitor, in coordination with BLM, will designate and flag an appropriate buffer area around the burrow where Project activities will not be permitted. The buffer area will be based on the nature of Project activity and burrowing owl activity (i.e., nesting vs. wintering). The Designated Biologist or Biological Monitor will continue to monitor the site until it is confirmed that the burrowing owl(s) is no longer present. If avoidance of quarrying or pipeline construction within the buffer area is infeasible, burrowing owls may be excluded from an active wintering season burrow in coordination with CDFW and in accordance with CDFW guidelines, including provision of replacement burrows prior to the exclusion.

FTHL-1. Flat-tailed Horned Lizard Mitigation. This measure supplements EIR Mitigation Measure 3.5-2, above. In addition to implementing standard mitigation measures contained within the Rangewide Management Strategy (Flat-tailed Horned Lizard Interagency Coordinating Committee, 2003) while constructing Quarry Well #3 and the Quarry pipelines (specified in Mitigation Measure 3.5-2), USG will implement those standard measures during ground-disturbing activities on the Replacement Pipeline Route or other project activities located in windblown sand habitat.

PBS-1. Peninsular Bighorn Sheep Habitat Mitigation. Mitigation of Peninsular bighorn sheep habitat impacts will include 1:1 on-site reclamation as specified in the Mining and Reclamation Plan and Mitigation Measure EIR-2 (above, from the 2008 Final EIR/EIS). Additionally, mitigation may include habitat compensation that may result from federal ESA consultation with the USFWS. Potential compensation lands may include claim areas that are not disturbed by the mining project. Any lands proposed for acquisition as compensation habitat will be subject to review and approval by the BLM and Wildlife Agencies.

PBS-2. Peninsular Bighorn Sheep Monitoring and Reporting. USG will record and report all on-site PBS observations to CDFW and BLM and will support the CDFW PBS monitoring and reporting program within the Fish Creek and Vallecito Mountains. USG will develop a reporting form for all PBS observations, including data fields for observer, date and time, number and descriptions of animals observed, and location (to be shown on an aerial view of the quarry area), and will submit completed forms for each observation. In addition USG will fund the purchase of radio collars and the capture of ten (10) PBS in the Fish Creek and Vallecito Mountains Ewe Group areas, to provide location monitoring data within these ewe groups over a ten-year period. The funding amount will be $157,115 (cost provided by CDFW), to be transferred to the CDFW program via a means agreed up by USG, BLM, and CDFW. The funding agreement will include a requirement that the funding will be specifically targeted to the Fish Creek and Vallecito Mountains Ewe Groups, and all resulting data will be available to BLM to support the long-term analysis of PBS activities in the federal action area.

PBS-3. Peninsular Bighorn Sheep Avoidance and Minimization Measures. USG will implement the following measures throughout the life of the project.

- New ground-disturbing activities (i.e., initial quarry development, quarry expansion, clearing for spoils deposition, or road construction in previously undisturbed areas) in designated critical habitat will not occur within Peninsular bighorn sheep lambing season (January 1 through May 30) as defined in the Recovery Plan, except with prior approval by USFWS and CDFW (the Wildlife Agencies).
- Minimize blasting during the lambing season (January 1 through May 30) within Quarry Phases 6Bp, 7Bp, 8, and 9 by building up a stockpile of material during the other months.
- The Designated Biologist or Biological Monitor will be on-site during any quarry expansion activities or other new ground disturbing activities and will walk the perimeter of the expansion area and view surrounding habitat with binoculars, stopping work if PBS are within a 0.25-mile radius of the activity.
- If a bighorn sheep enters an active work area, all heavy equipment operations will be halted until it leaves. Quarry staff may not approach the animal. If the animal appears to be injured or sick, USG will immediately notify USFWS and BLM.
- Fencing installed anywhere within the Plaster City Quarry area will be standard temporary construction fencing, silt fencing, or chain-link fence at least 7 feet tall. Any proposed permanent fencing design will be submitted for BLM and USFWS review and approval to confirm that the fence design is not likely to pose a threat to Peninsular bighorn sheep.
- When mobile or stationary equipment at the quarry is replaced, upgraded, or relocated, any feasible opportunities to reduce noise levels will be implemented (e.g., quieter designs for new equipment will be used if feasible).
- Quarrying procedures such as loading and unloading rock will be modified wherever practicable to minimize noise (e.g., by unloading rock into the crusher bin while it is partially full).

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Attachments

Attachment 1

Figures

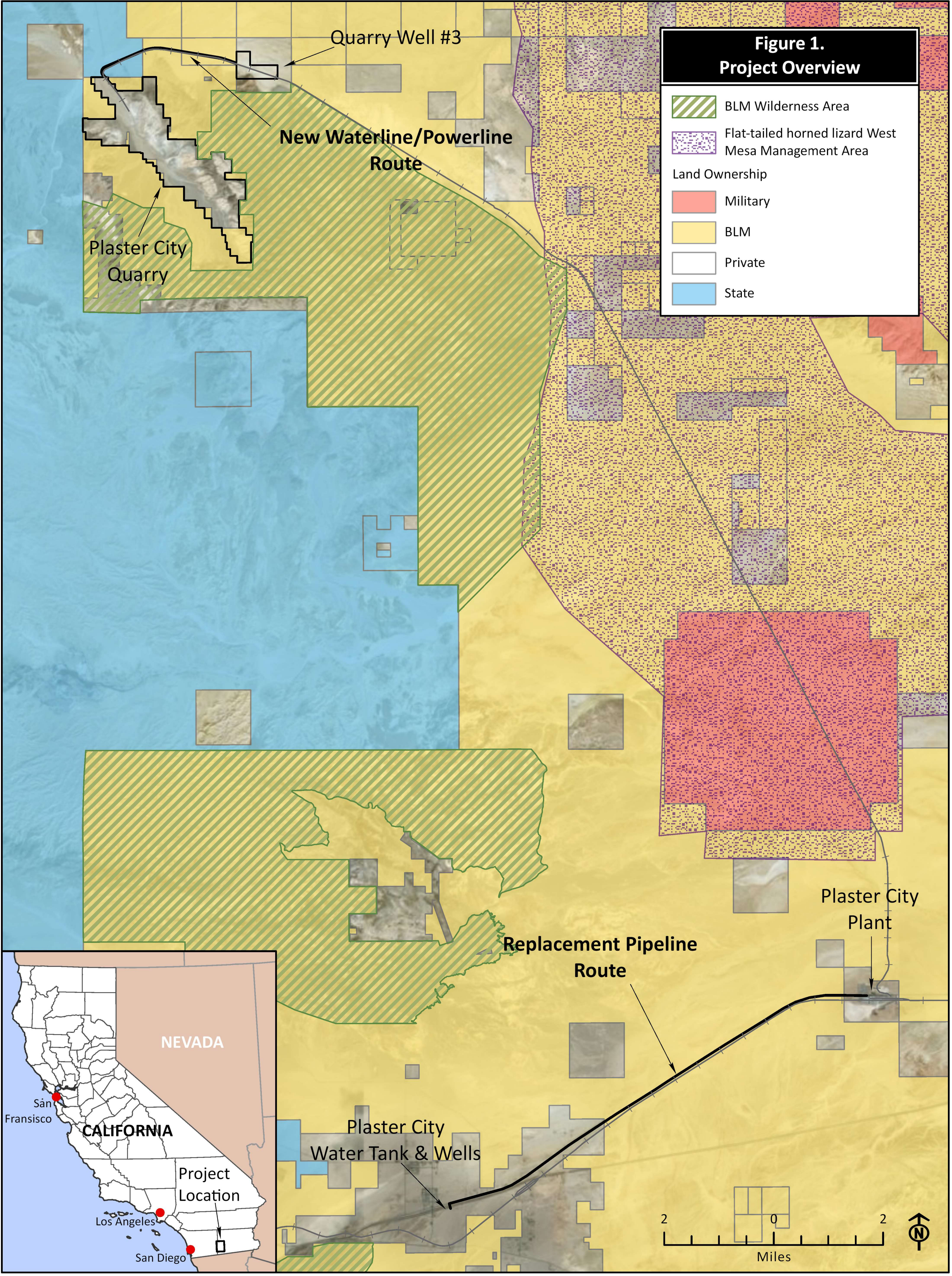

**Figure 1.
Project Overview**

Data Sources: BLM, 2016; Lilburn, 2018; ESRI, 2018

April 2018

Aspen Environmental Group

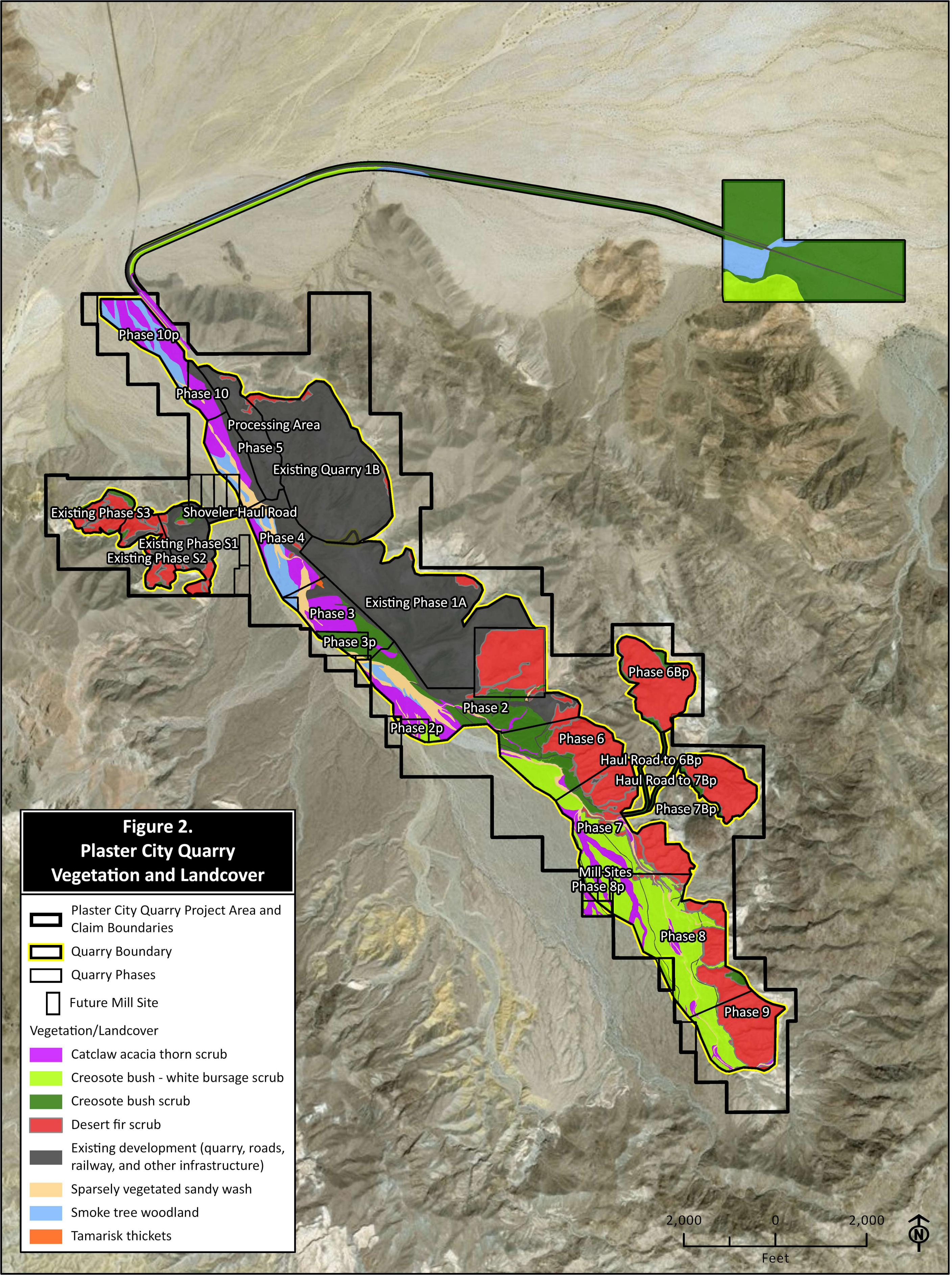

Figure 2.
Plaster City Quarry Vegetation and Landcover

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

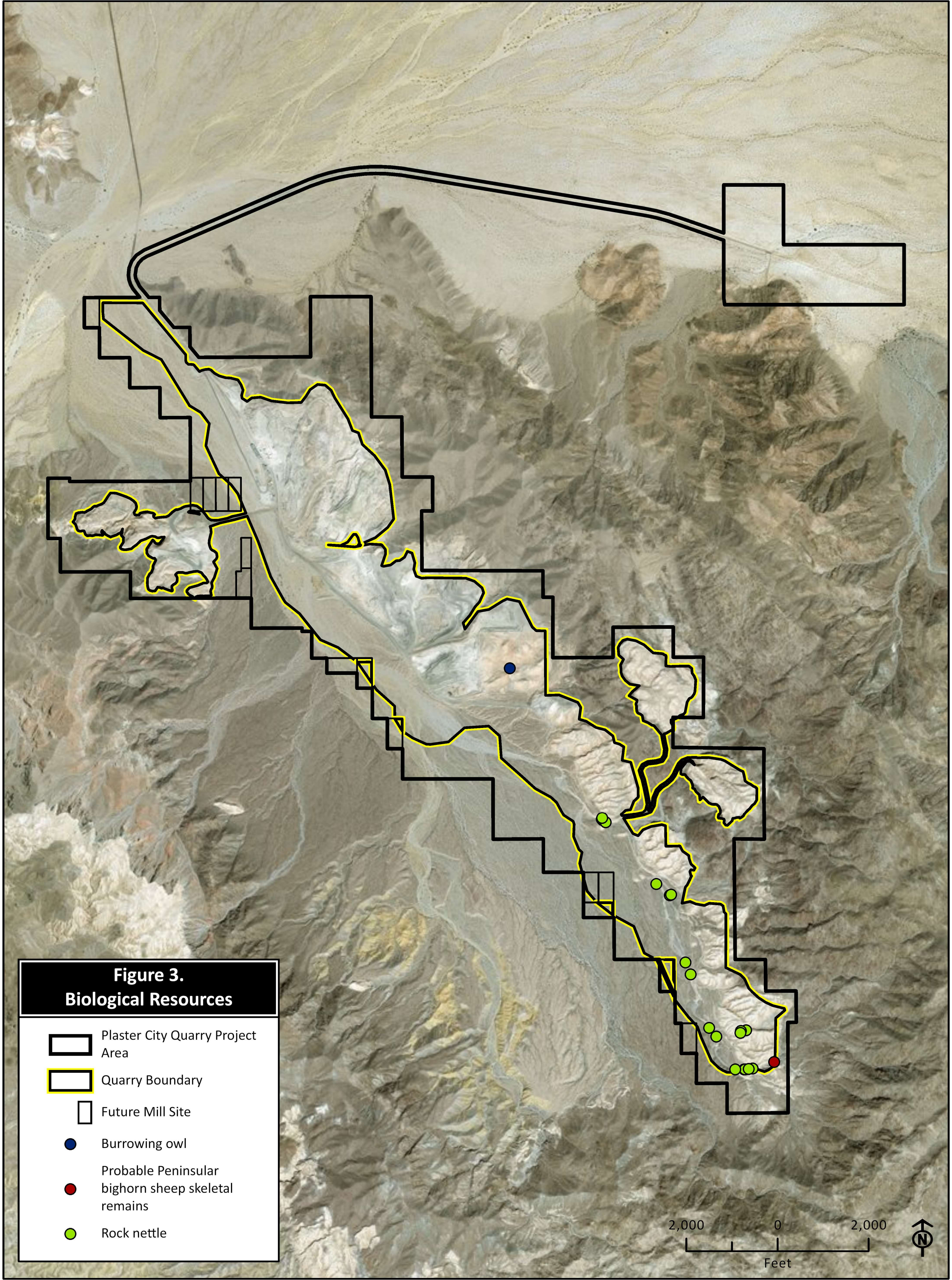

Figure 3.
Biological Resources

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018

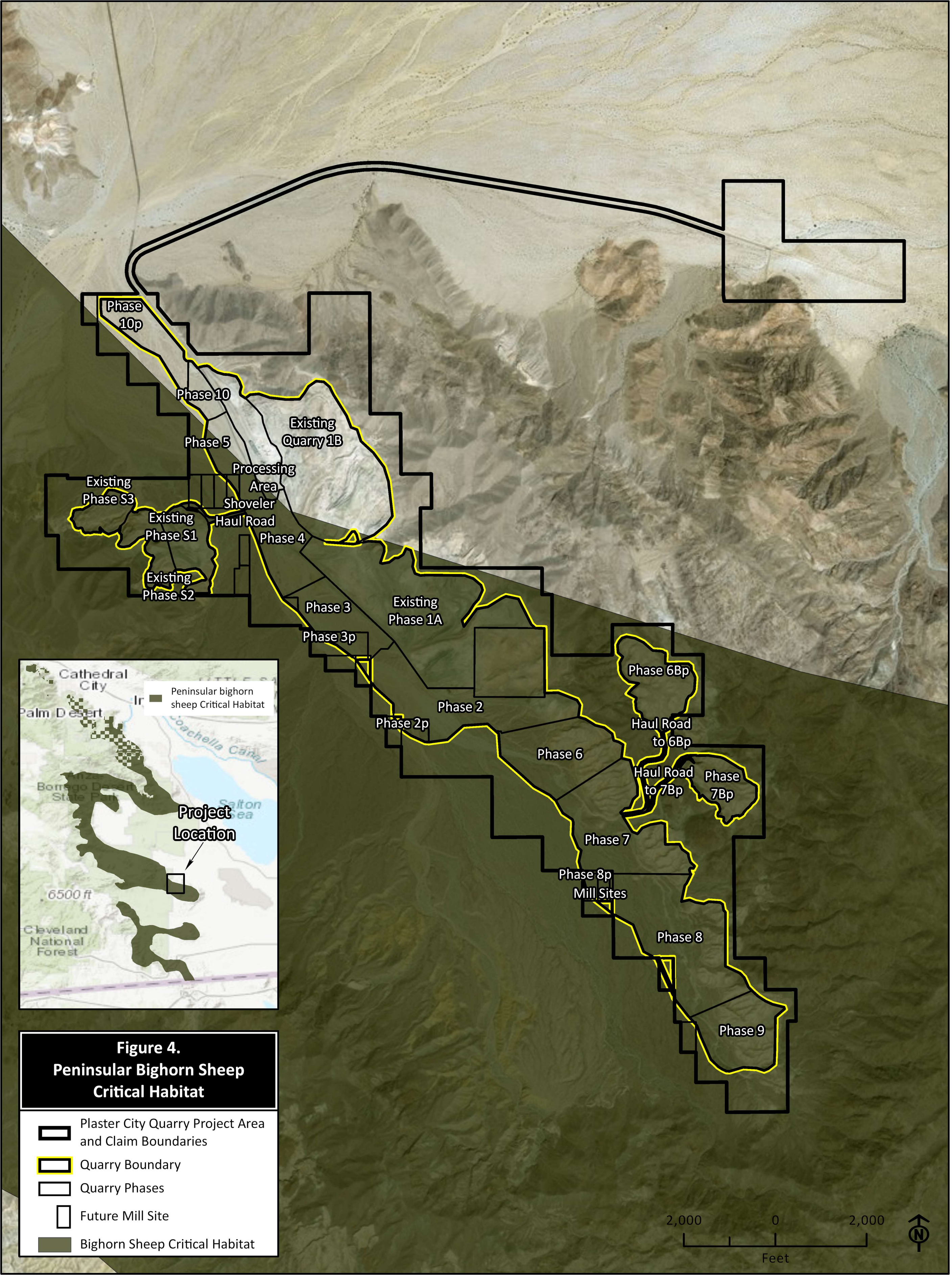

Figure 4.
Peninsular Bighorn Sheep Critical Habitat

Data Sources: Aspen, 2018; Lilburn, 2018; ESRI, 2018; USFWS 2017, CNDDB 2018

April 2018

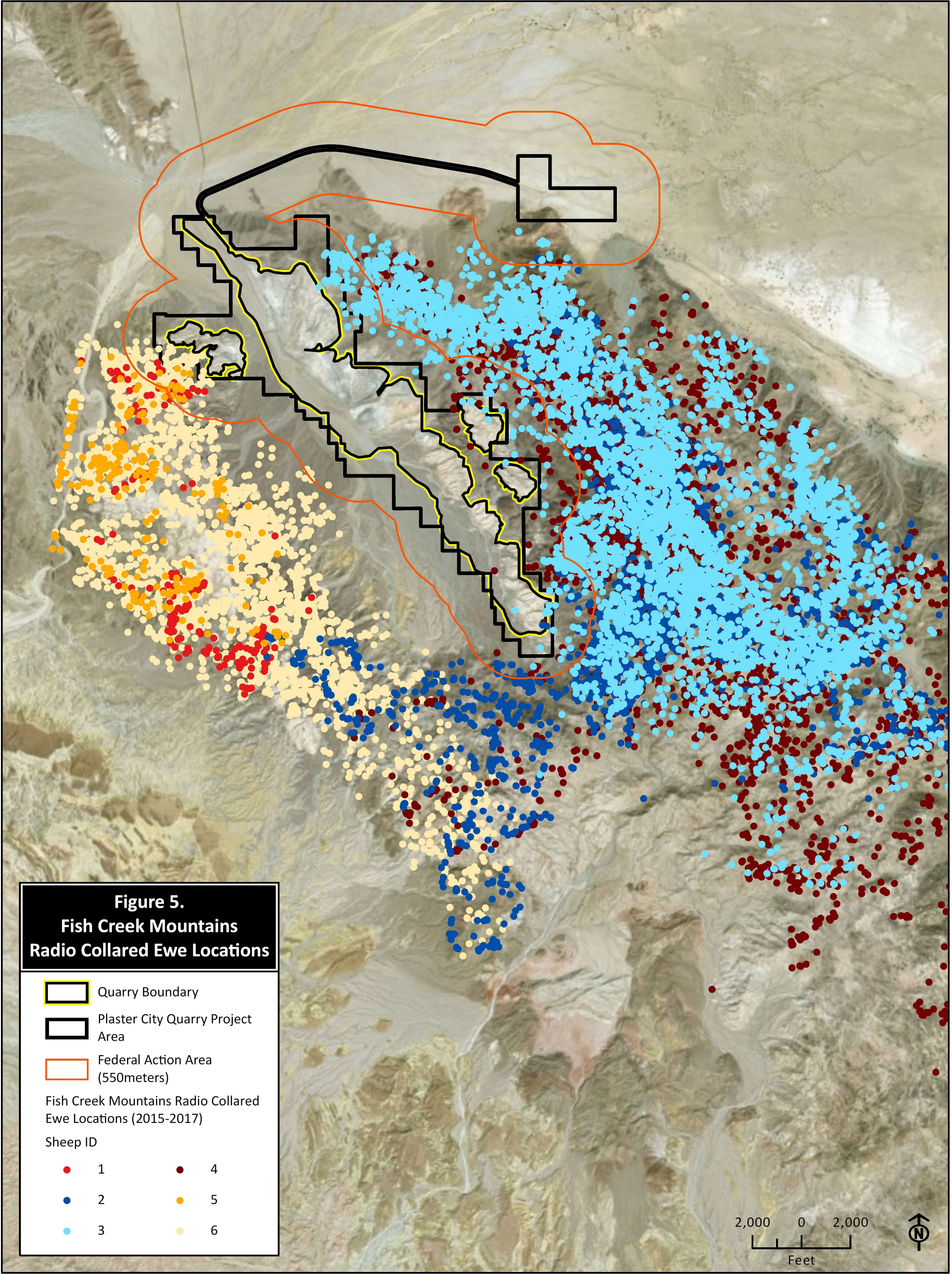

**Figure 5.
Fish Creek Mountains
Radio Collared Ewe Locations**

Data Sources: CDFW, 2018; Lilburn, 2018; ESRI, 2018

March 2018

Attachment 2

Photo Exhibits

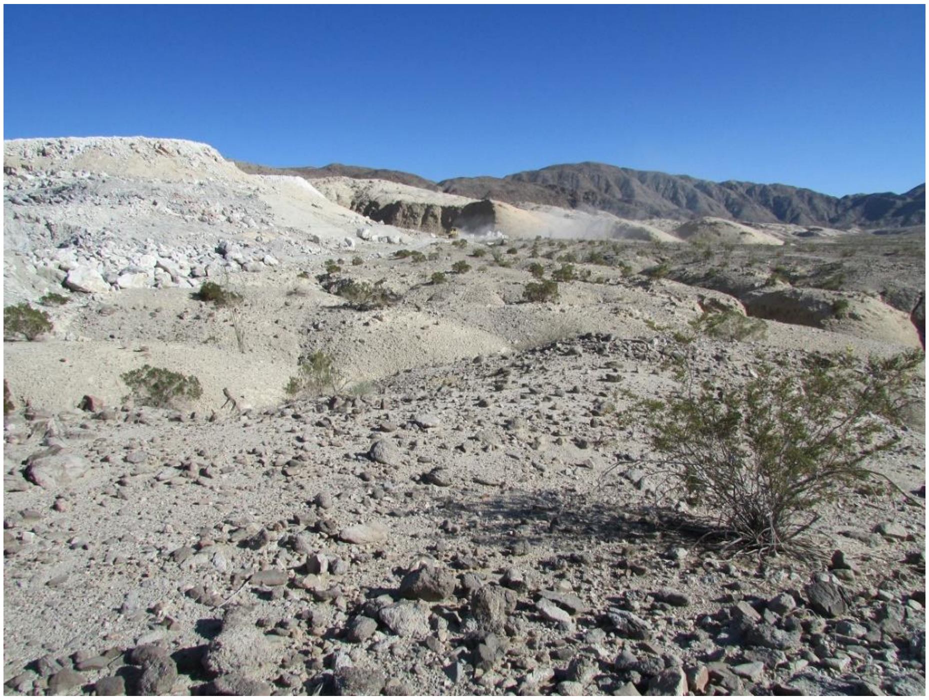

Photo 1: View of typical creosote bush scrub within the quarry expansion area.

Photo 2: View of typical creosote bush – white bursage scrub within the quarry expansion area.

Photo 3: View of catclaw acacia thorn scrub within the wash of the quarry expansion area.

Photo 4: View of smoke tree woodland within the wash of the quarry expansion area.

Photo 5: View of the sparse desert fir scrub growing on gypsum within the quarry expansion area.

Photo 6: View of tamarisk thickets mapped within the wash of the quarry expansion area.

Photo 7: Overview of a portion of the active quarry.

Photo 8: Wind-blown sand habitat along the proposed replacement pipeline alignment.

Photo 9: Wind-blown sand habitat along the proposed new pipeline alignment.

Photo 10: Annual rock-nettle on gypsum within the quarry expansion area.

Photo 11: Brown turbans identified within the quarry expansion area.

Photo 12: Wolf’s opuntia (right) growing alongside silver cholla (left) within the quarry expansion area.

Photo 13: Coulter's lyrepod within the quarry expansion area.

Photo 14: Thurber’s pilostyles growing along the proposed new pipeline alignment.

Photo 15: Peninsular bighorn sheep tracks observed within the quarry expansion area.

Photo 16: Apparent Peninsular bighorn sheep skeletal remains observed within the quarry expansion area (see Figure 3).

Photo 17: Burrowing owl observed within the quarry expansion area (non-breeding season).

Photo 18: Black-tailed gnatcatcher nest observed within the quarry expansion area.

Attachment 3

CNDDB Query Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Harper Canyon (3311612) OR Borrego Mountain SE (3311611) OR Harpers Well (3311518) OR Arroyo Tapiado (3211682) OR Carrizo Mtn. NE (3211681) OR Plaster City NW (3211588) OR Carrizo Mtn. (3211671) OR Painted Gorge (3211578) OR Plaster City (3211577) OR Yuha Basin (3211567) OR Coyote Wells (3211568) OR In-ko-pah Gorge (3211661))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Acmispon haydonii pygmy lotus	PDFAB2A0H0	None	None	G3	S3	1B.3
Antrozous pallidus pallid bat	AMACC10010	None	None	G5	S3	SSC
Aquila chrysaetos golden eagle	ABNKC22010	None	None	G5	S3	FP
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Astragalus douglasii var. perstrictus Jacumba milk-vetch	PDFAB0F303	None	None	G5T3?	S2S3	1B.2
Astragalus insularis var. harwoodii Harwood's milk-vetch	PDFAB0F491	None	None	G5T4	S2	2B.2
Astragalus sabulonum gravel milk-vetch	PDFAB0F7R0	None	None	G4G5	S2	2B.2
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bursera microphylla little-leaf elephant tree	PDBUR01020	None	None	G4	S2	2B.3
Calliandra eriophylla pink fairy-duster	PDFAB0N040	None	None	G5	S3	2B.3
Castela emoryi Emory's crucifixion-thorn	PDSIM03030	None	None	G3G4	S2S3	2B.2
Chaenactis carphoclinia var. peirsonii Peirson's pincushion	PDAST20042	None	None	G5T2	S2	1B.3
Chaetodipus fallax pallidus pallid San Diego pocket mouse	AMAFD05032	None	None	G5T34	S3S4	SSC
Coleonyx switaki barefoot gecko	ARACD01040	None	Threatened	G4	S1	
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC
Croton wigginsii Wiggins' croton	PDEUP0H140	None	Rare	G2G3	S2	2B.2
Crucifixion Thorn Woodland Crucifixion Thorn Woodland	CTT75200CA	None	None	G3	S1.2	
Cylindropuntia fosbergii pink teddy-bear cholla	PDCAC0D2U0	None	None	G2	S2	1B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Cyprinodon macularius desert pupfish	AFCNB02060	Endangered	Endangered	G1	S1	
Desert Fan Palm Oasis Woodland Desert Fan Palm Oasis Woodland	CTT62300CA	None	None	G3	S3.2	
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Eucnide rupestris annual rock-nettle	PDLOA02020	None	None	G3	S1	2B.2
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G5T4	S3S4	SSC
Euphorbia abramsiana Abrams' spurge	PDEUP0D010	None	None	G4	S2	2B.2
Euphorbia arizonica Arizona spurge	PDEUP0D060	None	None	G5	S3	2B.3
Falco mexicanus prairie falcon	ABNKD06090	None	None	G5	S4	WL
Geraea viscida sticky geraea	PDAST42020	None	None	G2G3	S2	2B.2
Gopherus agassizii desert tortoise	ARAAF01012	Threatened	Threatened	G3	S2S3	
Herissantia crispa curly herissantia	PDMAL0F010	None	None	G5	S1	2B.3
Hulsea mexicana Mexican hulsea	PDAST4Z050	None	None	G3G4	S1	2B.3
Ipomopsis effusa Baja California ipomopsis	PDPLM060U0	None	None	G3?	SH	2B.1
Ipomopsis tenuifolia slender-leaved ipomopsis	PDPLM060J0	None	None	G3	S2	2B.3
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Linanthus maculatus ssp. emaculatus Jacumba Mountains linanthus	PDPLM041Y2	None	None	G2T1	S1	1B.1
Lithobates yavapaiensis lowland leopard frog	AAABH01250	None	None	G4	SX	SSC
Lupinus albifrons var. medius Mountain Springs bush lupine	PDFAB2B1J5	None	None	G4T3	S2	1B.3
Lycium parishii Parish's desert-thorn	PDSOL0G0D0	None	None	G3?	S1	2B.3
Malperia tenuis brown turbans	PDAST67010	None	None	G4?	S2?	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Matelea parvifolia spear-leaf matelea	PDASC0A0J0	None	None	G5	S3	2B.3
Mentzelia hirsutissima hairy stickleaf	PDLOA030K0	None	None	G4	S3	2B.3
Mentzelia tricuspis spiny-hair blazing star	PDLOA031T0	None	None	G4	S2	2B.1
Mesquite Bosque Mesquite Bosque	CTT61820CA	None	None	G3	S2.1	
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nemacaulis denudata var. gracilis slender cottonheads	PDPGN0G012	None	None	G3G4T3?	S2	2B.2
Neotoma albigula venusta Colorado Valley woodrat	AMAFF08031	None	None	G5T3T4	S1S2	
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Nyctinomops femorosaccus pocketed free-tailed bat	AMACD04010	None	None	G4	S3	SSC
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Opuntia wigginsii Wiggins' cholla	PDCAC0D1P0	None	None	G3?Q	S1?	3.3
Ovis canadensis nelsoni pop. 2 Peninsular bighorn sheep DPS	AMALE04012	Endangered	Threatened	G4T3Q	S1	FP
Panicum hirticaule ssp. hirticaule roughstalk witch grass	PMPOA4K170	None	None	G5T5	S2	2B.1
Petalonyx linearis narrow-leaf sandpaper-plant	PDLOA04010	None	None	G4	S3?	2B.3
Pholistoma auritum var. arizonicum Arizona pholistoma	PDHYD0D011	None	None	G5T4?	S3	2B.3
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Phrynosoma mcallii flat-tailed horned lizard	ARACF12040	None	None	G3	S2	SSC
Pilostyles thurberi Thurber's pilostyles	PDRAF01010	None	None	G5	S4	4.3
Polioptila melanura black-tailed gnatcatcher	ABPBJ08030	None	None	G5	S3S4	WL
Pseudorontium cyathiferum Deep Canyon snapdragon	PDSCR2R010	None	None	G4G5	S1	2B.3
Selaginella eremophila desert spike-moss	PPSEL010G0	None	None	G4	S2S3	2B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sigmodon hispidus eremicus Yuma hispid cotton rat	AMAFF07013	None	None	G5T2T3	S2	SSC
Streptanthus campestris southern jewelflower	PDBRA2G0B0	None	None	G3	S3	1B.3
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Teucrium cubense ssp. depressum dwarf germander	PDLAM20032	None	None	G4G5T3T4	S2	2B.2
Toxostoma lecontei Le Conte's thrasher	ABPBK06100	None	None	G4	S3	SSC
Transmontane Alkali Marsh Transmontane Alkali Marsh	CTT52320CA	None	None	G3	S2.1	
Uma notata Colorado Desert fringe-toed lizard	ARACF15020	None	None	G3	S2	SSC
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	
Xylorhiza orcuttii Orcutt's woody-aster	PDASTA1040	None	None	G3?	S2	1B.2

Record Count: 70

Attachment 4

Observed Species List

Scientific Name	**Common Name**	**Project Component**		
		Quarry Expansion Area	**Replacement pipeline route**	**New pipeline route**
Filicales	**Fern families**			
Cheilanthes parryi	Parry's lip fern	x		
Dicotyledons				
ACANTHACEAE	ACANTHUS FAMILY			
Justicia californica	Chuparosa			x
AMARANTHACEAE	AMARANTH FAMILY			
Amaranthus fimbriatus	Fringed amaranth	x		
Tidestromia suffruticosa var. *oblongifolia*	Honeysweet	x	x	x
APOCYNACEAE	DOGBANE FAMILY			
Asclepias albicans	White-stemmed milkweed	x		
Asclepias subulata	rush milkweed	x		
Funastrum hirtellum	trailing townula	x	x	
APODANTHACEAE	STEMSUCKER FAMILY			
** *Pilostyles thurberi*	Thurber's pilostyles		x	
ASTERACEAE	ASTER FAMILY			
Adenophyllum porophylloides (Dyssodia poryphylloides)	San Felipe dyssodia	x		
Ambrosia dumosa	White bur-sage, burrobush	x	x	x
Ambrosia salsola (Hymenoclea salsola)	Common burrobrush, cheesebush	x	x	x
Baileya pleniradiata	Woolly desert-marigold		x	
Bebbia juncea var. aspera	Sweetbush	x	x	
Calycoseris wrightii	white tackstem	x		
Chaenactis carphoclinia	Pebble pincushion	x	x	
Chaenactis stevioides (?)	Desert pincushion	x		
Dicoria canescens	Desert dicoria	x	x	
Encelia farinosa	Brittlebush	x		x
Encelia frutescens	Rayless encelia	x	x	x
Geraea canescens	Hairy desert sunflower	x	x	x
Gutierrezia sp.	Unid. matchweed	x		
Isocoma acradenia var. *eremophila*	Alkali goldenbush		x	x
* *Lactuca serriola*	Prickly lettuce	x		x
Malacothrix glabrata	Desert dandelion	x		
** *Malperia tenuis*	Brown turbans	x	x	
Monoptilon bellioides	Desert star	x		
Palafoxia arida var. arida	Spanish needles	x	x	x
Pectis papposa var. papposa	Chinch-weed	x		
Perityle emoryi	Emory's rock daisy	x	x	
Peucephyllum schottii	Pygmy-cedar	x		
Pleurocoronis pluriseta	Arrowleaf	x		
Pluchea sericea	Arrowweed	x		x
Prenanthella exigua	Brightwhite	x		

	Psathrotes ramosissima	Turtleback	x	x	
	Rafinesquia neomexicana	Desert chicory	x		
	Senecio mohavensis	Mojave ragwort groundsel	x		
*	*Sonchus oleraceus*	Common sow thistle	x		
	Stephanomeria pauciflora var. *pauciflora*	Wire-lettuce, desert straw	x	x	x
	Stylocline micropoides	Desert neststraw	x		
	Trichoptilium incisum	Yellow head	x		
BIGNONIACEAE		TRUMPET-CREEPER FAMILY			
	Chilopsis linearis ssp. arcuata	Desert-willow	x	x	
BORAGINACEAE		BORAGE FAMILY			
	Cryptantha angustifolia	Panamint cryptantha	x	x	x
	Cryptantha barbigera	Bearded cryptantha	x		
**	*Cryptantha holoptera*	Winged cryptantha	x		
	Cryptantha maritima	Guadalupe cryptantha	x	x	
	Cryptantha sp.	Unid. annual cryptantha	x		
	Emmenanthe penduliflora	Whispering bells	x		
	Pectocarya heterocarpa	Mixed-nut pectocarya	x		
	Pectocarya platycarpa	Wide-toothed pectocarya	x		
	Pectocarya recurvata	Arched-nut pectocarya	x		
	Phacelia crenulata	Cleftleaf phacelia	x		
	Phacelia crenulata var. *minutiflora*	Cleftleaf wildheliotrope	x		
	Phacelia distans	Distant phacelia	x		
	Phacelia pedicellata	Specter phacelia	x		
	Phacelia sp.	Unid. phacelia		x	
	Tiquilia palmeri	Palmer's tiquilia	x	x	x
	Tiquilia plicata	Fanleaf crinklemat	x	x	x
BRASSICACEAE		MUSTARD FAMILY			
*	*Brassica tournefortii*	Sahara mustard	x	x	x
	Caulanthus lasiophyllus	California mustard	x		
	Draba cuneifolia	Sonora draba	x		
	Lepidium lasiocarpum	Shaggyfruit pepperweed	x	x	
**	*Lyrocarpa coulteri* var. *palmeri*	Coulter's lyrepod	x		
CACTACEAE		CACTUS FAMILY			
	Cylindropuntia echinocarpa	Silver cholla	x	x	x
	Cylindropuntia ramosissima	Pencil cholla	x		
**	*Cylindropuntia wolfii*	Wolf's cholla	x		
	Ferocactus cylindraceus	California barrel cactus	x	x	
	Mammillaria tetrancistra	Fishhook cactus	x		
	Opuntia basilaris var. *basilaris*	Beavertail cactus	x		
CAMPANULACEAE		BELLFLOWER FAMILY			
	Nemacladus tenuis	Desert nemacladus	x		
CARYOPHYLLACEAE		PINK FAMILY			
	Achyronychia cooperi	Onyx flower		x	
CHENOPODIACEAE		GOOSEFOOT FAMILY			
	Atriplex canescens	Four-wing saltbush			x
	Atriplex hymenelytra	Desert holly			x
	Atriplex polycarpa	Allscale saltbush			x

Salsola tragus	Russian thistle		x	
Suaeda nigra	Bush seepweed	x		x
CONVOLVULACEAE	MORNING-GLORY FAMILY			
Cuscuta sp.	Dodder	x		
CUCURBITACEAE	CUCUMBER FAMILY			
Cucurbita palmata	Coyote melon	x		x
EPHEDRACEAE	EPHEDRA FAMILY			
Ephedra aspera	Rough jointfir	x	x	x
Ephedra californica (?)	Desert tea, California ephedra		x	
EUPHORBIACEAE	SPURGE FAMILY			
Croton californicus	California croton		x	
Ditaxis lanceolata	Narrow-leaved ditaxis	x		x
Ditaxis neomexicana	Common ditaxis	x		
Euphorbia polycarpa	Smallseed sandmat	x	x	x
Euphorbia setiloba	Yuma sandmat, Yuma spurge	x	x	x
Stillingia spinulosa	Annual stillingia	x	x	x
FABACEAE	LEGUME FAMILY			
Acmispon strigosus	Strigose lotus	x		
Dalea mollissima	Rust dalea	x		x
Hoffmannseggia microphylla	Small-leaved caesalpinia	x	x	x
Lupinus arizonicus	Arizona lupine	x		
Parkinsonia aculeata	Mexican palo verde			x
Parkinsonia florida	Blue palo verde	x		
Prosopis glandulosa var. *torreyana*	Honey mesquite, mesquite	x		x
Psorothamnus emoryi	Emory indigo-bush, dye-weed	x	x	x
Psorothamnus schottii	Indigo-bush	x	x	x
Psorothamnus spinosus	Smoke tree	x	x	x
Senegalia greggii (Acacia greggii)	Catclaw, catclaw acacia	x	x	x
FOUQUIERIACEAE	OCOTILLO FAMILY			
Fouquieria splendens ssp. *splendens*	Ocotillo	x	x	x
KRAMERIACEAE	RHATANY FAMILY			
Krameria bicolor (K. grayi)	White rhatany	x	x	x
LAMIACEAE	MINT FAMILY			
Condea emoryi (Hyptis emoryi)	Desert lavender	x	x	
LOASACEAE	LOASA FAMILY, STICK-LEAF FAMILY			
Eucnide rupestris	Rock nettle	x		
Mentzelia involucrata	Sand blazing star	x	x	
Mentzelia sp.	Unid. annual	x		
** *Petalonyx linearis*	Narrow leaved sandpaper-plant	x		
Petalonyx thurberi ssp. *thurberi*	Sandpaper-plant	x	x	x
MALVACEAE	MALLOW FAMILY			
Eremalche rotundifolia	Desert fivespot	x		
Hibiscus denudatus	Paleface	x		

Sphaeralcea ambigua	Apricot mallow	x		
NYCTAGINACEAE	FOUR O'CLOCK FAMILY			
Abronia villosa var. *villosa*	Sand verbena	x	x	
Allionia incarnata var. *villosa*	Trailing windmills	x		x
Boerhavia coccinea (?)	Scarlet spiderling, red ringstem	x		
Boerhavia wrightii	Wright's boerhavia	x		
Mirabilis laevis	Desert wishbone bush	x		
ONAGRACEAE	EVENING-PRIMROSE FAMILY			
Chylismia brevipes ssp. *brevipes (Camissonia brevipes)*	Desert primrose		x	
Chylismia cardiophylla (Camissonia cardiophylla)	Heart-leaved camissonia	x		
Chylismia claviformis (Camissonia claviformis)	Clavate evening primrose	x		
Chylismia claviformis ssp. peirsonii (Camissonia claviformis var. peirsonii)	Peirson's yellow evening primrose	x	x	
Eremothera boothii ssp. *condensata (Camissonia boothii ssp. condensata)*	Desert lantern	x	x	
Eremothera refracta (Camissonia refracta)	Refracted desert primrose	x		
Eulobus californica (Camissonia californica)	California false mustard	x		
Oenothera deltoides	Birdcage evening primrose	x		
PAPAVERACEAE	POPPY FAMILY			
Argemone munita	Chicalote, prickly poppy	x	x	
Eschscholzia glyptosperma	Desert poppy	x	x	
Eschscholzia minutiflora	Pygmy poppy	x	x	
Eschscholzia parishii	Parish's gold poppy	x		
PLANTAGINACEAE	PLANTAIN FAMILY			
Mimulus bigelovii	Bigelow's monkeyflower	x		
Mohavea confertiflora	Ghost flower	x		
Plantago ovata	Desert plantain	x	x	x
POLEMONIACEAE	PHLOX FAMILY			
Aliciella latifolia	Broadleaf gilia	x	x	
Gilia sp.	Gilia	x		
Langloisia setosissima var. *setosissima*	Great Basin langloisia	x	x	
Loeseliastrum matthewsii	Desert calico	x	x	
Loeseliastrum schottii	Schott's langloisia	x	x	
POLYGONACEAE	BUCKWHEAT FAMILY			
Chorizanthe brevicornu	Brittle spineflower	x	x	
Chorizanthe corrugata	Wrinkled spineflower	x	x	
Chorizanthe rigida	Devil's spineflower	x	x	x
Eriogonum deflexum var. deflexum	Skeleton weed	x	x	

	Eriogonum deflexum var. rectum	Flat-crowned buckwheat	x		
	Eriogonum inflatum	Desert trumpet	x	x	
	Eriogonum thomasii	Thomas' wild buckwheat	x	x	
	Eriogonum trichopes	Little desert trumpet	x		
RESEDACEAE		MIGNONETTE FAMILY			
	Oligomeris linifolia	Narrowleaf oligomeris	x	x	
SOLANACEAE		NIGHTSHADE FAMILY			
	Datura discolor	Jimsonweed	x	x	
	Datura wrightii	Jimsonweed, tolguacha			x
	Lycium andersonii	Boxthorn	x		
	Nicotiana obtusifolia	Desert tobacco	x		x
	Physalis crassifolia	Thick-leaf ground-cherry	x	x	
TAMARICACEAE		TAMARISK FAMILY			
*	*Tamarix aphylla*	Athel	x		x
*	*Tamarix ramosissima*	Saltcedar, tamarisk	x		x
VISCACEAE		MISTLETOE FAMILY			
	Phoradendron californicum	Desert mistletoe	x		
ZYGOPHYLLACEAE		CALTROP FAMILY			
	Fagonia laevis	Smooth-stem fagonia	x		
	Fagonia pachyacantha	Glandular fagonia	x	x	x
	Kallstroemia californica	California caltrop			x
	Larrea tridentata	Creosote bush	x	x	x
Monocotyledons					
AGAVACEAE		CENTURY PLANT FAMILY			
	Agave deserti	Desert agave	x		x
	Hesperocallis undulata	Desert lily		x	
POACEAE		GRASS FAMILY			
	Aristida adscensionis	Sixweeks three-awn grass	x	x	x
	Aristida purpurea	Three-awn grass	x		
	Bouteloua aristidoides var. *aristidoides*	Needle grama	x		
	Bouteloua barbata var. *barbata*	Sixweeks grama	x		
*	*Bromus madritensis* ssp. *rubens*	Red brome	x		
	Cynodon dactylon	Bermuda grass			x
	Dasyochloa pulchella	Low fluffgrass	x		
*	*Festuca myuros*	Rattail sixweeks grass	x		
	Hilaria rigida	Big galleta	x	x	x
	Schismus barbatus	Mediterranean grass	x	x	x
*	*Sorghum bicolor*	Sorghum	x		
*	*Sorghum halepense*	Johnson grass	x		
	Stipa speciosa	Desert needle grass		x	
TYPHACEAE		CATTAIL FAMILY			
	Typha sp.	cattails			x

Scientific Name	Common Name	Project Component		
VERTEBRATE ANIMALS		**Quarry Expansion Area**	**Replacement pipeline route**	**New pipeline route**
REPTILIA	REPTILES	x	x	x
IGUANIDAE	IGUANID LIZARDS	x	x	x
Dipsosaurus dorsalis	Desert iguana	x	x	x
Callisaurus draconoides	Zebra-tailed lizard	x	x	
Uta stansburiana	Side-blotched lizard	x	x	x
Phrynosoma platyrhinos	Desert horned lizard		x	
TEIIDAE	WHIPTAILS	x	x	
Aspidoscelis tigris tigris	Great Basin whiptail	x	x	
VIPERIDAE	VIPERS		x	
Crotalus cerastes	Sidewinder		x	
AVES	BIRDS		x	
COLUMBIDAE	PIGEONS AND DOVES		x	
* *Streptopelia decaocto*	Eurasian collared dove		x	
Zenaida macroura	Mourning dove	x	x	
STRIGIDAE	TYPICAL OWLS	x		
Bubo virginianus	Great horned owl	x		
** *Speotyto cunicularia*	Burrowing owl	x		
TROCHILIDAE	HUMMINGBIRDS	x		
Calypte anna	Anna's hummingbird	x		
Calypte costae	Costa's hummingbird	x		
TYRANNIDAE	TYRANT FLYCATCHERS		x	
Sayornis saya	Say's phoebe		x	
Myiarchus cinerascens	Ash-throated flycatcher		x	
CORVIDAE	CROWS AND JAYS		x	
Corvus corax	Common raven		x	
REMIZIDAE	VERDINS	x	x	x
Auriparus flavipes	Verdin	x	x	x
TROGLODYTIDAE	WRENS			
Salpinctes obsoletus	Rock wren	x		
MUSCICAPIDAE	THRUSHES AND ALLIES	x		
** *Polioptila melanura*	Black-tailed gnatcatcher	x		
PTILOGONATIDAE	SILKY FLYCATCHERS	x		
Phainopepla nitens	Phainopepla	x		
LANIIDAE	SHRIKES	x		
** *Lanius ludovicianus*	Loggerhead shrike	x		
FRINGILLIDAE	FINCHES	x	x	x
Carpodacus mexicanus	House finch	x	x	x
MAMMALIA	MAMMALS	x		
LEPORIDAE	HARES AND RABBITS	x		
Lepus californicus	Black-tailed hare	x		
HETEROMYIDAE	POCKET MICE	x		
Dipodomys sp.	Kangaroo rat	x		

CRICETIDAE	RATS AND MICE	x
Neotoma lepida intermedia	San Diego desert woodrat	x
CANIDAE	FOXES, WOLVES AND COYOTES	
Canis latrans	Coyote	x
FELIDAE	CATS	x
Lynx rufus	Bobcat	x
BOVIDAE	SHEEP AND GOATS	x
Ovis canadensis nelsoni	Peninsular bighorn sheep	x

This list includes species observed or detected on the project site. Non-native species are indicated by an asterisk. Special Status species indicated by two asterisks. Other species may have been overlooked or inactive/absent because of the season (amphibians are active during rains, reptiles during summer, some birds (and bats) migrate out of the area for summer or winter, some mammals hibernate etc.). Taxonomy and nomenclature generally follow Stebbins (2003) for amphibians and reptiles, AOU (1998) for birds, and Jones et al. (1992) for mammals.

Attachment 5

Special-Status Species Not Addressed

Attachment 5. Special-status Species Not Addressed in the Report.

Scientific Name	Common Name	Reason for Exclusion
PLANTS		
Astragalus douglasii var. *perstrictus*	Jacumba milk-vetch	Below elevation range
Astragalus pachypus var. *jaegeri*	Jaeger's milk-vetch	Well outside of geographic range.
Ayenia compacta	Ayenia	Well outside of geographic range.
Colubrina californica	Las Animas colubrina	Well outside of geographic range.
Condalia globosa var. *pubescens*	Spiny abrojo	Well outside of geographic range.
Coryphantha alversonii	Alverson's foxtail cactus	Well outside of geographic range.
Croton wigginsii	Wiggins' croton	Well outside of geographic range.
Cylindropuntia fosbergii	Pink teddy-bear cholla	Well outside of geographic range.
Delphinium parishii ssp. *subglobosum*	Colorado Desert larkspur	Well below elevation range
Ditaxis claryana	Glandular ditaxis	Well outside of geographic range.
Eryngium aristulatum var. *parishii*	San Diego button-celery	No suitable vernal pool habitat
Geraea viscida	Sticky geraea	No suitable habitat and below elevation range
Herissantia crispa	Curly herissantia	Locally rare, below elevation range
Hulsea mexicana	Mexican hulsea	No suitable habitat
Ipomopsis effusa	Baja California ipomopsis	Well outside of geographic range.
Linanthus maculatus ssp. *emaculatus*	Jacumba Mountains linanthus	Well outside of geographic range.
Matelea parvifolia	Spear-leaf matelea	Well below elevation range.
Mentzelia tricuspis	Spiny-hair blazing star	Well outside of geographic range, most records in vicinity are misidentified *M. hirsutissima.*
Nama stenocarpa	Mud nama	No suitable aquatic habitat.
Opuntia wigginsi	Wiggins cholla	Margin of geographic range
Panicum hirticaule ssp. *hirticaule*	Roughstalk witch grass	Well outside of geographic range.
Penstemon clevelandii var. *connatus*	San Jacinto Mountain penstemon	Well below elevation range.
Penstemon thurberi	Thurber's beardtongue	Well below elevation range.
Pseudorontium cyathiferum (Antirrhinum cyathiferum)	Deep Canyon snapdragon	Well outside of geographic range.
Rhus aromatica var. *simplicifolia (Rhus trilobata* var. *simplicifolius)*	Single-leaved skunkbrush	Well below elevation range.
Salvia eremostachya	Desert sage	Below elevation range, margin of geographic range
Salvia greatae	Orocopia sage	Well outside of geographic range.
Stemodia durantifolia	Purple stemodia	No suitable habitat
Streptanthus campestris	Southern jewelflower	Well below elevation range and no suitable habitat.
Symphyotrichum defoliatum	San Bernardino aster	No suitable wetland or marsh habitat.
AMPHIBIANS		
Lithobates yavapaiensis	Lowland leopard frog	No suitable aquatic habitat
REPTILES		

Scientific Name	Common Name	Reason for Exclusion
Arizona elegans occidentalis	California glossy snake	Outside of geographic range. This is a coastal subspecies that reaches In-ko-pah Gorge where it integrates within the desert subspecies (*A. e. eburnata*).
Crotalus ruber ruber	Northern red diamond rattlesnake	East of geographic range.
Gopherus agassizii	Desert tortoise	Well outside of geographic range
Phyrnosoma blainvillii	Coast horned lizard	Well outside of geographic range
BIRDS		
Empidonax traillii extimus	Southwestern willow flycatcher	No suitable riparian habitat
Laterallus jamaicensis coturniculus	California black rail	No suitable wetland habitat
Pyrocephalus rubinus	Vermilion flycatcher	No suitable riparian habitat.
Toxostoma crissale	Crissal thrasher	No suitable riparian habitat.
Vireo bellii pusillus	Least Bell's vireo	No suitable riparian habitat
Junco hyemalis caniceps	California gray-headed junco	Well outside of geographic range, no suitable habitat.
MAMMALS		
Neotoma lepida intermedia	San Diego desert woodrat	Well outside of geographic range.
Sigmodon hispidus eremicus	Yuma hispid cotton rat	No suitable wetland or grassland habitat.

Attachment 6

CNDDB Data Forms

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Eucnide rupestris*

Common Name: Annual rock-nettle

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: 28 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5667 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology: 25 % vegetative 75 % flowering ___ % fruiting

Animal Information

___ # adults ___ # juveniles ___ # larvae ___ # egg masses ___ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, gypsum deposits southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carizzo Mountain NE, Borrego Mountain SE Elevation: 590-800 ft.

T 13S R 9E Sec 33, ___ $^1/_4$ of ___ $^1/_4$, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T 14S R 9E Sec 4, ___ $^1/_4$ of ___ $^1/_4$, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587470.46 mE, 3652023.18 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Plants growing on north-facing slopes of gypsum outcrops. Growing on nearly vertical canyon walls and sporatic plants also observed in wash downstream. Total of 28 plants observed at approximately 15 locations in the upper wash, GPS point is for the downstream-most plants

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ______

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☒ Keyed (cite reference): Baldwin et al, 2012
- ☐ Compared with specimen housed at: ______
- ☐ Compared with photo / drawing in: ______
- ☐ By another person (name): ______
- ☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☒

May we obtain duplicates at our expense? ● yes ○ no

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California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only

Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 04/05/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Malperia tenuis*

Common Name: Brown turbans

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: >30 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5656 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:

	100	
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 590 ft.

T 13S R 9E Sec 33 , ___¼ of ___¼, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___ , ___¼ of ___¼, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 587835.94 m E, 3652121.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ______

Comments:

Determination: *(check one or more, and fill in blanks)*

☒ Keyed (cite reference): Baldwin et al, 2012
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 04/05/2016

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California Native Species Field Survey Form

Scientific Name: *Cryptantha holoptera*

Common Name: Winged cryptantha

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: ~12 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 5665 (Number) ______ (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology:

% vegetative	% flowering	% fruiting
	100	

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Borrego Mountain SE Elevation: 520 ft.
T 13S R 9E Sec 33 , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ___ R ___ Sec ___ , ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○
Coordinates: 587217.92 m E, 3652213.39 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Scattered plants growing on sandy alluvium in upper wash from the GPS point provided, south into upper wash.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: ______
Comments:

Determination: *(check one or more, and fill in blanks)*
☒ Keyed (cite reference): Baldwin et al, 2012
☐ Compared with specimen housed at: ______
☐ Compared with photo / drawing in: ______
☐ By another person (name): ______
☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Date of Field Work (mm/dd/yyyy): 04/06/2016

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Source Code:		Quad Code:	
Elm Code:		Occ No.:	
EO Index:		Map Index:	

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Cylindropuntia wolfii*

Common Name: Wolf's opuntia

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: >50 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: 515 (Number) (Michelle Cloud-Hughes) (Museum / Herbarium)

Reporter: Justin M. Wood

Address: 615 N. Benson Ave., Upland, CA 91786

E-mail Address: Jwood@aspeneg.com

Phone: (909) 568-5235

Plant Information

Phenology:
100 % vegetative ______ % flowering ______ % fruiting

Animal Information

______ # adults ______ # juveniles ______ # larvae ______ # egg masses ______ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 750 ft.

T 14S R 9E Sec 4, ____ $^1/_4$ of ____ $^1/_4$, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____ $^1/_4$ of ____ $^1/_4$, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 588327.12 m E, 3650406.25 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Large population of plants in the upper end of the wash, primarilly on alluvial terraces and benches.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats:

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference):
☐ Compared with specimen housed at:
☐ Compared with photo / drawing in:
☒ By another person (name): Michelle Cloud-Hughes
☐ Other:

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ______ Quad Code: ______
Elm Code: ______ Occ No.: ______
EO Index: ______ Map Index: ______

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lyrocarpa coulteri*

Common Name: Coulter's lyrepod

Species Found? ● Yes ○ No ______ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ______ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ______ Number ______ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology:
100 % vegetative ______ % flowering ______ % fruiting

Animal Information

______ # adults ______ # juveniles ______ # larvae ______ # egg masses ______ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, narrow side canyon that flows from mountains to the east. Southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 600 ft.

T 13S R 9E Sec 33, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ______ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 587872.29 m E, 3652241.62 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Single plant growing in sandy substarte at the base of a large bedrock outcrop on south side of canyon.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ______

Comments:

Determination: *(check one or more, and fill in blanks)*

- ☒ Keyed (cite reference): Baldwin et al, 2012
- ☐ Compared with specimen housed at: ______
- ☐ Compared with photo / drawing in: ______
- ☐ By another person (name): ______
- ☐ Other: ______

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Pilostyles thurberi*

Common Name: Thurber's pilostyles

Species Found? ● Yes ○ No ____ If not found, why?
Total No. Individuals: –5 Subsequent Visit? ○ Yes ● No
Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.
Collection? If yes: 5653 (Number) RSA (Museum / Herbarium)

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology: ____ % vegetative 100 % flowering ____ % fruiting

Animal Information
____ # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Lower Borrego Valley, south of Fish Creek Wash, along north side of US Gypsum railroad and unpaved road.

County: Imperial Landowner / Mgr: Unknown
Quad Name: Borrego Mountain SE Elevation: 80 ft.
T 13S R 9E Sec 16 , SE 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○
Coordinates: 588226.11 m E, 3655951.59 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Small patch of plants growing on Psorothamnus emoryi in sandy substrates.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Natural lands to north, railroad and unpaved road to south.
Visible disturbances: Shooting and offroad vehciles use in area.
Threats: ____
Comments:

Determination: *(check one or more, and fill in blanks)*
☒ Keyed (cite reference): Baldwin et al, 2012
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code:		Quad Code:	
Elm Code:		Occ No.:	
EO Index:		Map Index:	

Date of Field Work (mm/dd/yyyy): 10/26/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Ovis canadensis nelsoni*

Common Name: Peninsular bighorn sheep

Species Found? ● Yes ○ No If not found, why?

Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? Yes, Occ. #: ☐ No ☒ Unk.

Collection? If yes: Number: Museum / Herbarium:

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology: % vegetative: % flowering: % fruiting:

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
	1			

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Carrizo Mountain NE Elevation: 770 ft.

T 14S R 9E Sec 4, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ___ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○

Coordinates: 588629.00 m E, 3650409.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Skeletal remains of a possible juvenile bighorn sheep observed in upper wash, near where wash turns to an easterly direction. Bighorn sheep tracks abundant throughout upper wash. No evidence of bighorn sheep using gypsum outcrops but evidence of moderate use of washes. Bighorn sheep tracks also observed further down the wash in 2014 when sheep were observed drinking water from a quarry pit that filled with water following significant floods in the area. The water has since dried up and sheep are no longer observed in the quarry pit.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats:

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference):
☐ Compared with specimen housed at:
☐ Compared with photo / drawing in:
☐ By another person (name):
☐ Other:

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 10/30/2014

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Athene cunicularia*

Common Name: Burrowing owl

Species Found? ● Yes ○ No ____ If not found, why?

Total No. Individuals: 1 Subsequent Visit? ○ Yes ● No

Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.

Collection? If yes: ____ Number ____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information

Phenology: ____ % vegetative ____ % flowering ____ % fruiting

Animal Information

1				
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Fish Creek Mountains, gypsum outcrops just southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private

Quad Name: Borrego Mountain SE Elevation: 580 ft.

T 13S R 9E Sec 29, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ○ Horizontal Accuracy: ____ meters/feet

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● ***OR*** Geographic (Latitude & Longitude) ○

Coordinates: 586847.00 m E, 3653026.00 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

A single wintering burrowing owl observed on a gypsum deposit. No burrow observed at the location of the owl but suitable burrows are present in the vicinity.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Gypsum quarry to northwest

Visible disturbances: None

Threats: ____

Comments:

Determination: *(check one or more, and fill in blanks)*

☐ Keyed (cite reference): ____
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ● Yes ○ No ____ If not found, why?
Total No. Individuals: 2 Subsequent Visit? ○ Yes ● No
Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.
Collection? If yes: ____ Number ____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology:
____ % vegetative ____ % flowering ____ % fruiting

Animal Information
2 # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Carrizo Mountain NE Elevation: 625 ft.
T 13S R 9E Sec 33, ____1/4 of ____1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○
Coordinates: 587621.39 m E, 3651698.92 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two loggerhead shrikes observed in broad alluvial wash. No nest observed but probable in the area.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: ____
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ____
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ● no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: (916) 324-0475 email: CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: ____ Quad Code: ____
Elm Code: ____ Occ No.: ____
EO Index: ____ Map Index: ____

Date of Field Work (mm/dd/yyyy): 04/07/2016

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Polioptila melanura*

Common Name: Black-tailed gnatcatcher

Species Found? ● Yes ○ No ____ If not found, why?
Total No. Individuals: 6 Subsequent Visit? ○ Yes ● No
Is this an existing NDDB occurrence? ____ Yes, Occ. # ☐ No ☒ Unk.
Collection? If yes: ____ Number ____ Museum / Herbarium

Reporter: Justin M. Wood
Address: 615 N. Benson Ave., Upland, CA 91786
E-mail Address: Jwood@aspeneg.com
Phone: (909) 568-5235

Plant Information
Phenology:
____ % vegetative ____ % flowering ____ % fruiting

Animal Information

2	4			
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☒ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Fish Creek Mountains, broad alluvial wash southeast of US Gypsum Quarry.

County: Imperial Landowner / Mgr: Private
Quad Name: Carrizo Mountain NE Elevation: 625 ft.
T 13S R 9E Sec 33 , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS
T ____ R ____ Sec ____ , ____ 1/4 of ____ 1/4, Meridian: H ○ M ○ S ○ GPS Make & Model: Trimble Juno
DATUM: NAD27 ○ NAD83 ○ WGS84 ○ Horizontal Accuracy: ____ meters/feet
Coordinate System: UTM Zone 10 ○ UTM Zone 11 ● *OR* Geographic (Latitude & Longitude) ○
Coordinates: 587693.61 m E, 3651483.41 m N

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Nest with four juvenile birds observed in a desert lavender (Condea emoryi) shrub in small wash just west of the main wash. Both adults were in the area and scoulded the biologist upon approaching the nest.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor
Immediate AND surrounding land use: Gypsum quarry to northwest
Visible disturbances: None
Threats: ____
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): ____
☐ Compared with specimen housed at: ____
☐ Compared with photo / drawing in: ____
☐ By another person (name): ____
☐ Other: ____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

APPENDIX G: ALTERNATIVE PRELIMINARY PRACTICALITY DETERMINATION

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EXHIBIT 1

PROJECT ALTERNATIVES
PRELIMINARY PRACTICALITY DETERMINATION

Alternative 2: Lower Quarry Watershed Reduced Mining Footprint

Under Alternative 2, Phase 10 would not be mined to its full capacity while Phase 10P would be eliminated entirely. Phase 5 would continue to be mined at full capacity. Approximately 5.4 million tons less gypsum would be mined than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce the projected mine life by 2.81 years compared with the proposed project. Under this alternative, permanent impacts to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed project to 117.62 acres, resulting in a 16.01-acre decrease in impacts to waters of the United States. The need for a flood protection berm along the west perimeter of Phase 10P would be eliminated. Eliminating Phase 10P would eliminate its direct impacts on the arroyo wash and would avoid the downstream impacts on Fish Creek.

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 2 is constructible and would not present substantial logistical issues. It can be implemented without exposing mining personnel to human health and safety risks while following a balanced mining approach. However, it fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 5.4 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 2 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 3: Lower Quarry Watershed Reduced Mining Footprint

Alternative 3 proposes to reconfigure the mining footprint along the western boundaries of Phases 4 and 5 where Annex Mill Site No. 4 encroaches into the ephemeral wash to reduce impacts to waters of the United States. The mining boundaries of Phases 4 and 5 were selected for reconfiguration because of their close proximity to existing administrative/office facilities, where blasting is not ideal on account of the noise, and the depth of overburden needing to be stripped in order to access and extract the gypsum ore. Approximately 11.87 million tons less ore would be mined under this alternative than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 6.18 years compared to the proposed project. Under this alternative, permanent impacts *to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed project to 125.43 acres, resulting in an 8.20-acre reduction.*

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 3 is constructible and would not present substantial logistical issues. However, it fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 11.87 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 3 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 4: Middle Quarry Watershed Phase Elimination

Under Alternative 4, Phases 2P, 3P (North) and 3P (South) would be eliminated from the proposed mining plan, resulting in a reduction in impacts to waters of the United States from 133.63 acres under the proposed Project to 126.78 acres. This equates to a 6.85-acre reduction in impacts compared to the proposed Project. Approximately 2.33 million tons less gypsum would be mined under this alternative than under the proposed project. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 1.21 years compared with the proposed project. While there would be a reduction in impacts to waters of the United States under this alternative, the removal of these three phases would realign the proposed stormwater berm such that it would be nearly perpendicular to flow in the main channel along three significant sections where the phases are proposed for removal (from approximately 300 to 1,300 feet long). The shift in berm orientation along these three sections would likely lead to increased scouring potential and would require additional engineering to prevent failure (e.g., berm would need to be anchored to a wider berm footing set deeper in the channel).

Based on the evaluation of logistics and constructability criteria and environmental impacts, while Alternative 4 is constructible it suffers from logistical issues in that eliminating phases from the middle watershed will disrupt the balanced mining approach and sequencing critical to cost and time efficient gypsum ore extraction. Additionally, from an environmental impacts perspective, impacts to waters of the United States are equal to or greater than the proposed project because the waters proposed for preservation under this alternative would incur greater indirect impacts due to a severing of hydrology. Further, Alternative 4 fails to meet the overall Project purpose, because the loss of 2.33 million tons of gypsum would adversely affect USG's ability to reliably supply gypsum products at levels consistent with current and projected demand. Therefore, Alternative 4 was not selected to be the Least Environmentally Damaging Practicable Alternative.

Alternative 5: Upper Quarry Watershed Reduced Mining Footprint

Alternative 5 represents a reduced project alternative focusing exclusively on Phases 7 and 8 in the upper Quarry watershed. Under Alternative 5, the mining boundaries of Phases 7 and 8 would be reconfigured to reduce impacts to waters of the United States. Initially, the elimination of mining Phases 9, 8, 7, and 6 was considered but was determined to be infeasible for the following reasons: (1) Phases 8 and 9 are at the southernmost terminus of the upper Quarry watershed where the channels are deeply incised and a substantive reduction in impacts to waters of the United States is not anticipated, and (2) the potential elimination of either Phase 6 or 7 was considered but, similar to issues in the middle Quarry watershed, the elimination of either of these phases would result in an increase in indirect effects to waters of the United States and a loss of functions and services resulting from the isolation and fragmentation of these resources.

Under Alternative 5, the mining boundaries of Phases 7 and 8 would be moved east into the proposed quarry operations and would align parallel with the existing drainage. Impacts to waters of the United States associated with the mine development plan would be reduced from 133.63 acres under the proposed Project to 122.35 acres, resulting in an 11.28-acre reduction in impacts to waters of the United States. The overall mining footprint would also be reduced by 34 acres, thereby decreasing potential mining beneath the valley alluvium where gypsum ore has determined to be most prevalent. Approximately 13.04 million tons less gypsum would be mined under this alternative than under the Proposed Action. At a maximum permitted production of 1.92 million tons per year, this alternative would reduce projected mine life by 6.79 years compared to the proposed project.

Based on the evaluation of logistics and constructability criteria and environmental impacts, Alternative 5 is constructible and would not present substantial logistical issues. Further, this alternative would incur the greatest reduction in impacts to waters of the United States compared to the proposed project. However, despite reporting lesser environmental impacts, Alternative 5 fails to meet the overall project purpose due to considerable estimates of gypsum loss (i.e., 13.04 million tons), which would adversely affect USG's ability to provide a continuous, reliable supply of gypsum rock to meet current and projected demands. Therefore, Alternative 5 was not selected to be the Least Environmentally Damaging Practicable Alternative.

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APPENDIX H:
ERRATA TABLE

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EXHIBIT 4
SPECIFIC COMMENTS AND ERRATA

Page	Section/Text	Comment
ix	Table of Contents, Appendix D: Biological Resource Reports	Suggest including the following as additional reports in this section: 1) Approved Jurisdictional Determination issued by the U.S. Army Corps of Engineers on February 8, 2021 (see Exhibit 1); and 2) Jurisdictional aquatic resources delineation for the Old Kane Spring Road Site prepared by Dudek in April 2022 (see Exhibit 4).
ES-5	Executive Summary, Project Objectives	Consider revising the final bullet with the following modification: “*Provide compensatory mitigation for potential impacts to waters of the state as a result of project implementation in compliance with State of California Fish & Game Code Section 1600 and the ~~Port-Cologne~~ Porter-Cologne Water Quality Control Act (Porter-Cologne Act).*”
ES-7	First paragraph - Summary of alternatives	Consider revising the second sentence, as follows: “The following alternatives, which were evaluated in the 2019 SEIS, were selected and analyzed/compared to the project and are evaluated in the SEIR:”
ES-7 through ES-9	Executive Summary, Summary of Alternatives	On February 8, 2021 the USACE issued an Approved Jurisdictional Determination (see Exhibit 1) confirming that there are no waters of the United States subject to regulation under Section 404 of the Clean Water Act in the project area. As such, all references to “waters of the United States” should be removed and replaced with “waters of the State.”
ES-23	Impact 4.2-4, Impact 4.2-5	Significance after mitigation is blank. Insert “LTS.”
ES-28	Impact 4.6-4	Replace “rom” with “from.”
1-1	Introduction	In the first sentence, change “Condition Use Permit” to “Conditional Use Permit.”
1-1	Section 1.1 (Purpose of a Subsequent Environmental Impact Report)	In the second paragraph, eliminate references to waters of the United States. Consider using the following modified text: “*The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of ~~waters of the United States~~ aquatic resources at the Quarry by restoring, enhancing, and reserving aquatic resources at a property where aquatic functions are similar to the impacted functions.* “
1-4	Section 1.2 (Summary of the Proposed Project)	Eliminate references to waters of the United States and replace with waters of the state.
1-6	Section 1.5 (Responsible Agencies)	Under “Federal Agencies” the USACE is identified as a federal agency to coordinate with for the issuance of a Section 404 permit. However, as previously indicated, the USACE issued an Approved Jurisdictional Determination on February 8, 2021 confirming the absence of waters of the United States in the project area. Therefore, a Section 404 permit is no longer required. Please revise accordingly.
1-6	Section 1.5 (Responsible Agencies)	Under “State” agencies the Colorado River RWQCB is identified as issuing a 401 Certification. However, this is incorrect as the aquatic features in the project area are not subject to Clean Water Act jurisdiction. Please revise to state that the RWQCB will be issuing Waste Discharge Requirements for the project in accordance with the Porter-Cologne Act.
1-6	Section 1.5 (Responsible Agencies)	Under “State” agencies, add the California Department of Parks and Recreation (California State Parks). Implementation of the Viking Ranch Restoration Project involves removal via grading of an agricultural diversion ditch and diversion berms and related activities to re-establish hydrology and normal floodplain functions and control weeds. These activities will occur in part on adjacent lands owned by California State Parks and the Anza Borrego Foundation.

Page	Section/Text	Comment
		Approval by California State Parks is required through the issuance of an encroachment permit to implement the mitigation project.
1-6	Section 1.5 (Responsible Agencies)	Under "Regional and Local Agencies" it is unclear why the Colorado River RWQCB is identified as both a state agency and as a regional and local agency. Please correct or clarify as needed.
2-2	Section 2.2 (Project Background, Mitigation Sites)	Remove references to "waters of the United States" and replace with "waters of the State."
2-7	Figure 2-2b	To avoid confusion, the parcel numbers on this figure should be revised to reflect the correct format for San Diego County (i.e., "xxx-xxx-xx-xx), as correctly indicated in Table 2.1 on page 2-12.
2-12.	Table 2-1	Under "San Diego County," the table identifies parcel number 140-030-01-00, and the ownership of this parcel is not identified. However, this parcel number is incorrect. The parcel number should be changed to 140-090-01-00, and the ownership should be identified as "State Park."
2.25	Section 2.6 (Proposed Project Elements – Viking Ranch Restoration)	Figure 2-6 should be referenced in the first paragraph.
2-26	Baseline Conditions, first bullet	Note that plastic oil containers have been removed from the site.
2-28	Section 2.6 (Following Viking Ranch Mitigation Description)	Consider adding a description for the preservation and long-term resource management of Old Kane Springs Road site, which is currently missing from Section 2.6. The description should reference Figure 2-4.
2-31	Section 2.7.1	For greater clarity, consider adding the following phrase to the end of last sentence: "for Viking Ranch."
2-31	Section 2.7.2	For the reason stated above, add "California Department of Parks and Recreation" as an agency whose approval may be required for the project.
3-5	Section 3.3.3 (Statutory and Regulatory SEIR Provisions)	Revise the third sentence of the last paragraph as follows: *"The 2019 Final SEIS included mitigation to offset the impacts to 139 acres of ~~waters of the United States (WoUS)~~ aquatic resources at the Quarry by restoring, enhancing, and preserving aquatic resources at a property where aquatic functions are similar to the impacted functions."*
4.1-21	Section 4.1.4.4 (Old Kane Springs Road Preservation Site)	Revise the first sentence as follows: *"Emissions associated with preservation of the Old Kane Springs Preservation Site would be limited to ~~regular maintenance~~ infrequent truck trips for periodic site monitoring and would be negligible."*
4.2-1	Section 4.2 (Biological Resources) - Introductory Section	Consider adding the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (see Exhibit 1) as an additional literature source.
4.2-12, 4.2-23, and 4.2-52	Biological Resources	It should be noted in the FSEIR that Peninsular bighorn sheep is a fully protected under the Fish and Game Code and that no "take" of this species is required or will be sought by USG in connection with the Project.

Page	Section/Text	Comment
4.2-26	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Delete the reference to non-wetland waters of the United States and replace with non-wetland waters of the State.
4.2-27	Section 4.2.1.3 (Biological Resource Conditions at Present, Well No. 3 Site and Pipeline)	Revise the following statement as indicated: *"According to the 2019 SEIS, there are no jurisdictional wetlands present within the proposed pipeline alignment. However, there are a few drainage courses along the alignment that would likely meet criteria as state jurisdictional ephemeral stream channels, subject to permitting under Section ~~16013~~ 1602 of the Fish and Game Code, and ~~possibly~~ as waters of the ~~US~~ State subject to permitting under the Porter-Cologne Act ~~Section 404 of the Federal Clean Water Act (Imperial County 2019)~~."*
4.2-30	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Consider revising the following statement as indicated: *"Pursuant to the ~~federal Clean Water Act, ACOE and RWQCB,~~ Porter-Cologne Act, RWQCB jurisdictional areas include those supporting all three wetlands criteria consistent with and as identified in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. ~~Areas regulated by the RWQCB are generally coincident with the ACOE but can also include waters of the state that may be regulated, pursuant to the state Porter Cologne Act."~~*
4.2-30 through 4.2-31	Section 4.2.1.3 (Biological Resource Conditions at Present, Aquatic Jurisdictional Resources)	Remove references to "waters of the United States" and replace with "waters of the State."
4.2-34	Table 4.2-4 - Jurisdictional Resources within the Old Kane Springs Road Preservation Site	Remove "ACOE" as a jurisdictional agency from the "Total" line.
4.2-49	Section 4.2.4.3 (Substantial Project Changes - New Information)	The second paragraph of this Section (top of page 4.2-49) should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1).
4.2-63	Impact 4.2-3 (Quarry, Well No. 3 Site and Pipeline Alignment)	This discussion should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1). Among other things, consider revising the text as follows: *"The 2008 EIR/EIS determined that Quarry expansion activities would impact existing streambeds which could be under the jurisdiction of CDFG through Sections 1601-3 of the California Fish and Game Code or the US Army Corps of Engineers through Section 404 of the Federal Clean Water Act. However, since that time, the USACE issued an Approved Jurisdictional Determination confirming there are no waters of the United States subject to regulation under Section 404 of the federal Clean Water Act in the project area. However, the RWQCB maintains jurisdiction over the aquatic resources in the project area under the Porter-Cologne Act"*
4.6-9	Section 4.6.1.3 (Viking Ranch Restoration Site-Floodplain)	The first sentence should be revised as follows: *"The floodplain on the Viking Ranch site is shown on ~~Figure 2-4, "Old Kane Springs Road Preservation Site~~ Figure 2-3, Viking Ranch Restoration Site."*

Page	Section/Text	Comment
4.6-22	Section 4.6.4.3 (Substantial Project Changes - New Information)	This discussion should be updated and revised as needed in light of the Approved Jurisdictional Determination issued by the USACE on February 8, 2021 (Exhibit 1).
4.6-24	Section 4.6.4.4 (Viking Ranch Restoration Site)	The first paragraph is not relevant to the Viking Ranch Restoration Site and should be deleted.
4.7-1	Section 4.7.1.1 (Land Use and Planning – Well No. 3 and Associated Pipeline)	The last sentence ("No development was present in 2008") is incorrect. Disturbance on the private parcel and the pipeline alignment was present prior to 2008. Wells are present on the private parcel, and the pipeline alignment/tramway has an active railroad line in place with a dirt access road paralleling the tramway along its entire length.
4.7-2	Section 4.7.1.2 (Land Use Conditions at Present – Well No. 3 Site and Pipeline Alignment)	The second sentence ("Both the well site and pipeline alignment remain undeveloped with no structures or other improvements") is incorrect. Disturbance on the private parcel and the pipeline alignment was present prior to 2008. Wells are present on the private parcel, and the pipeline alignment/tramway has an active railroad line in place with a dirt access road paralleling the tramway along its entire length.
4.7-13	Section 4.7.4.3 (Impact 4.7-1)	Revised the second sentence as follows: *"There are no established communities adjacent <u>to</u> the Quarry …"*
4.8-5	Section 4.8.3.1 (Significance Criteria – CEQA Appendix G Significance Criteria)	The CEQA Appendix G Significance Criteria are listed for cultural resources but not for Tribal Cultural Resources. Consider adding the criteria listed below for Tribal Cultural Resources from the CEQA Guidelines (Appendix G, Section XVIII), which were used in the subsequent environmental analysis in Section 4.8.4.4: *"Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe."*
5-16	Section 5.3.5 (Greenhouse Gas Emissions – Project Impacts)	Revise the first sentence as follows: *"Project impacts pertaining to ~~geology, soils, and paleontological resources~~ <u>greenhouse gas emissions</u>, as described in Section ~~4.4~~ <u>4-5</u>, are as follows:"*
5-17	Section 5.3.6 (Hydrology and Water Quality – Project Impacts)	Revise the first sentence as follows: *"Project impacts pertaining to ~~geology, soils, and paleontological resources~~ <u>hydrology and water quality</u>, as described in Section ~~4.4~~ <u>4-6</u>, are as follows:"*

APPENDIX I:
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE MITIGATION MONITORING AND REPORTING PROGRAM

(CDFW Comment Letter 4e: Attachment 1)

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ATTACHMENT 1: MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

Mitigation Measures	**Timing and Methods**	**Responsible Parties**
Mitigation Measure 3.4-11: PBS Monitoring and Reporting. **USG will support the CDFW PBS monitoring and reporting program within the federal action area by providing funding to maintain a combination of radio and VHF collars on ten (10) PBS in the Fish Creek and ten (10) PBS in the Vallecito Mountains Ewe Group areas for the life of the mining Project. Evaluation of collar numbers, capture hours, and funding allocation shall be made every 10 years throughout the life of the Project in coordination with CDFW.**	**Timing**: Throughout the life of the Project. **Methods:** See Mitigation Measure	**Implementation**: Project Proponent and County of Imperial **Monitoring and Reporting**: County of Imperial
Mitigation Measure BIO-[B]: Surveys for Daytime, Nighttime, Wintering (Hibernacula), and Maternity Roosting Sites for Bats **Prior to the initiation of quarrying activities into previously undisturbed areas, construction of Well No. 3 and associated pipeline, and restoration of the Viking Ranch Restoration Site within suitable special-status bat roosting habitat, the Applicant shall retain a qualified biologist to conduct focused surveys to determine presence of daytime, nighttime, wintering (hibernacula), and maternity special-status bat species roost sites. Two spring surveys (April through June) and two winter surveys (November through January) shall be performed by qualified biologists. Surveys shall be conducted during favorable weather conditions only. Each survey shall consist of one dusk emergence survey (start one hour before sunset and last for three hours), followed by one pre-dawn reentry survey (start one hour before sunrise and last for two hours), and one daytime visual inspection of all potential roosting habitat on the project site. Surveys shall be conducted within one 24-hour period. Visual inspections shall focus on the identification of special-status bat sign (i.e., individuals, guano, urine staining, corpses, feeding remains, scratch marks and bats squeaking and chattering). Bat detectors, bat call analysis, and visual observation shall be**	**Timing:** Prior to initiation of quarrying activities into previously undisturbed areas throughout the life of the Project **Methods:** See Mitigation Measure	**Implementation**: Project Proponent and County of Imperial **Monitoring and Reporting**: County of Imperial

used during all dusk emergence and pre-dawn re-entry surveys. If active hibernacula or maternity roosts of special-status bat species are identified in the work area or 500 feet extending from the work area during preconstruction surveys, the following requirements will apply: • **For special-status bat species maternity roosts, quarry expansion activities into undisturbed and occupied habitat will be initiated between October 1 and February 28, outside of the maternity roosting season when young bats are present but are not yet ready to fly out of the roost. Maternity roosts shall not be evicted, excluded, removed, or disturbed.** • **For special-status bat hibernacula, a minimum 500-foot no-work buffer shall be provided around hibernacula. The buffer shall not be reduced except as specified herein. Project-related construction and activities shall not occur within 500 feet of or directly under or adjacent to hibernacula. Buffers shall be left in place until a qualified bat biologist determines that the hibernacula are no longer active. Within this buffer, project-related activities shall not occur between 30 minutes before sunset and 30 minutes after sunrise. Hibernacula roosts shall not be evicted, excluded, removed, or disturbed. If avoidance of a hibernacula is not feasible, the Project Biologist will prepare a relocation plan to remove the hibernacula and provide for construction of an alternative bat roost outside of the work area. A bat roost relocation plan shall be submitted for CDFW review prior to initiation of project-related activities. The qualified biologist will implement the relocation plan and new roost sites shall be in place before the commencement of any ground-disturbing activities that will occur within 500 feet of the hibernacula. New roost sites shall be in place prior to the initiation of project-related activities to allow enough time for bats to relocate. Removal of roosts will be guided by accepted exclusion and deterrent techniques. Imperial County shall compensate no less than 2:1 for permanent impacts to roosting habitat.**		

Attachment H: Resolution for Conditional Use Permit (CUP) #20-0016

RESOLUTION NO. ____

A RESOLUTION OF THE PLANNING COMMISSION OF THE COUNTY OF IMPERIAL, CALIFORNIA, APPROVAL OF "CONDITIONAL USE PERMIT #20-0016" FOR U.S. GYPSUM PLASTER CITY QUARRY EXPANSION AND WELL NO. 3 PROJECT

WHEREAS, United States Gypsum Company (USG) has submitted an application for Conditional Use Permit (CUP) #20-0016 for A new water well as part of the proposed as part of the U.S. Gypsum Plaster City Quarry Expansion Project (project);

WHEREAS, a Final Subsequent Environmental Impact Report (Final SEIR) (SCH # 2001121133) and the California Environmental Quality Act (CEQA) Findings have been prepared in accordance with the requirements of CEQA, the State Guidelines, and the County's "Rules and Regulations to Implement CEQA," as Amended;

WHEREAS, the Planning Commission of the County of Imperial has been delegated with the responsibility of approvals of conditional use permits and certifications of Environmental Impact Reports;

WHEREAS, public notice of said application has been given, and the Planning Commission has heard, received and considered all oral and written protests, objections and evidence presented by interested parties at a public hearing held with respect to this item on November 16, 2023; and

WHEREAS, the Draft SEIR was received by the State Clearinghouse on July 18, 2022, and circulated for a period of 45 days (SCH# 2001121133).

NOW, THEREFORE, the Planning Commission of the County of Imperial **DOES HEREBY RESOLVE** as follows:

SECTION 1. The Planning Commission has considered the proposed Conditional Use Permit #20-0016 prior to approval and the County's consideration of the project has been noticed in compliance with law.

SECTION 2. That the project complies with the requirements of the Imperial County Code and is in accordance with State Planning and Zoning law therefore, the following findings are made pursuant to Imperial County Code Section 90203.09 as follows:

A. **The proposed use is consistent with the goals and policies of the adopted County General Plan.** ***(Imperial County Code Section 90203.09.A)***

   Expansion of the Quarry and development of Well No. 3 and associated pipeline would be consistent with the existing Imperial County General Plan land use designations for the site. Furthermore, as demonstrated in Table 4.7-1 on the Final SEIR (SCH #2001121133), the project would not substantially conflict with any applicable land use policies adopted by Imperial County or San Diego County for the purpose of avoiding or mitigating environmental effects.

B. **The proposed use is consistent with the purpose of the zone or sub-zone within which the use will be used. *(Imperial County Code Section 90203.09.B)***

Mining activities may be permitted within any County zoning designation, including lands designated as Open Space Preservation, subject to the provisions of the County Surface Mining and Reclamation Ordinance. As the local land use authority, Imperial County authorizes mining activities on unincorporated lands through the issuance of surface mining permits and approval of reclamation plans pursuant to Imperial County Code of Ordinances, Title 9, Land Use Code, Division 20, Surface Mining and Reclamation. The provisions of the County's Surface Mining and Reclamation Ordinance apply to all lands within the county, both public and private. As provided by this ordinance, surface mining operations are permitted only upon County approval of a surface mining permit (or existence of vested rights), reclamation plan, and financial assurances for reclamation. Thus, the existing quarry and the proposed project are consistent with the County Zoning Ordinance.

C. **The proposed use is listed as a use within the zone or sub-zone or is found to be similar to a listed conditional use according to the procedures of Section 90203.00. *(Imperial County Code Section 90203.09.C)***

The analysis provided in Section 902030.09.B is applicable to this criterion and is therefore not repeated here.

D. **The proposed use meets the minimum requirements of this Title applicable to the use and complies with all applicable laws, ordinances and regulation of the County of Imperial and the State of California. *(Imperial County Code Section 90203.09.D)***

The project complies with the minimum requirements of this Title by, among other things, obtaining a CUP, complying with the California Environmental Quality Act, and participating in the public review and hearing process. Mitigation Measures have been established for the project pursuant to these processes and will be enforced via imposition and enforcement of the Mitigation Monitoring and Reporting Program recommended for approval by separate Resolution, as well as the conditions of approval imposed on this CUP. The Conditions of Approval will further insure that the project complies with all applicable regulations of the County of Imperial and the State of California. Therefore, the proposed project meets the minimum requirements of the Land Use Ordinance, Section 90203.00.

E. **The proposed use will not be detrimental to the health, safety, and welfare of the public or to the property and residents in the vicinity. *(Imperial County Code Section 90203.09.E)***

The Environmental Impact Report prepared for the project analyzed the project's potential effects on the health, safety, and welfare of the public and property and found that, with mitigation, the project has less than significant effects in all resources areas. Finally, the project applicant has agreed to conditions of approval that support and promote the protection of the health, safety, and welfare of the County's citizens and property, and ensures that the County will not be negatively impacted environmentally or fiscally.

In addition, the project site is not near a residential community and is mostly surrounded by undeveloped open desert.

F. **The proposed use does not violate any other law or ordinance.** ***(Imperial County Code Section 90203.09.F)***

The proposed project will be subject to the Conditional Use Permit and current Federal, State and Local regulations. State Planning and Zoning Law (Cal. Govt. Code Sections 65000-66035) establishes minimum statewide standards for the regulation of local land use through planning and zoning. The County regulates local land use via Title 9 of the Imperial County Code. As found above, the proposed project is conditioned to be consistent with Imperial County, Title 9, Land Use Ordinance and CEQA mitigation measures and therefore complies with both State and local laws and ordinance. Pursuant to CEQA, the County has prepared an EIR for the project, which EIR analyzes the project's compliance and consistency with other federal, state, and local laws and ordinances regulating the environment. Substantial evidence supports the conclusions in the EIR that the project complies with said environmental laws. The County is aware of no other laws or ordinances that might be implicated by the project, and thus the finds that the proposed use does not violate any other law or ordinance.

G. **The proposed use is not granting a special privilege.** ***(Imperial County Code Section 90203.09.G)***

The proposed use is considered a mining operation, which is a permitted use subject to approval of a Conditional Use Permit under Land Use Ordinance, Section 92001.00 *et. seq.* and the water well would be an accessory use to said facility, subject to a Conditional Use Permit. No special privileges are being or will be granted.

SECTION 3. Approval of the project should be conditioned upon the terms and conditions set forth in the Agreement for CUP #20-0016 attached hereto and incorporated herein by this reference.

NOW, THEREFORE, based on the above findings, the Imperial County Planning Commission **DOES HEREBY APPROVE** of Conditional Use Permit #20-0016 to the subject to the attached Conditions of Approval.

Rudy Schaffner, Chairperson
Imperial County Planning Commission

I hereby certify that the preceding resolution was taken by the Planning Commission at a meeting conducted on **November 16, 2023**, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

James A Minnick, Director of Planning & Development Services
Secretary to the Planning Commission

S:\AllUsers\APN\033\020\009\CUP20-0016\PC\CUP20-0016 PC USG Resolution.docx

Recorded Requested by and
When Recorded Return To:

____

Imperial County Planning & Dev. Services Department
801 Main Street
El Centro, California 92243

AGREEMENT FOR CONDITIONAL USE PERMIT #20-0016 WATER WELL (U.S. Gypsum)

(Approved by the Planning Commission on November 16, 2023)

This Agreement is made and entered into on this __ day of _____________ by and between **U.S. Gypsum** hereinafter referred to as Permittee, and the COUNTY OF IMPERIAL, a political subdivision of the State of California, (hereinafter referred to as "COUNTY").

RECITALS

WHEREAS, Permittee is the owner, lessee or successor in interest in 20 certain land in Imperial County identified as Assessor's Parcel Number 033-010-016-000, 033-010-017-000, 033-010-025-000, 033-060-008-000, 033-060-009-000, 033-060-010-000, 033-060-012-000, 033-070-001-000, 033-070-004-000, 033-070-005-000, 033-070-008-000, 033-070-010-000, 033-070-011-000, 033-070-017-000, 033-070-023-000, 033-080-005-000, 033-090-011-000, 033-090-012-000, 033-090-013-000, 033-090-014-000, 033-090-015-000, 033-020-009-000; and;

WHEREAS, Permittee is the owner, lessee or successor in interest in 20 certain land in Imperial County identified as Assessor's Parcel Number 033-010-016-000, 033-010-017-000, 033-010-025-000, 033-060-008-000, 033-060-009-000, 033-060-010-000, 033-060-012-000, 033-070-001-000, 033-070-004-000, 033-070-005-000, 033-070-008-000, 033-070-010-000, 033-070-011-000, 033-070-017-000, 033-070-023-000, 033-080-005-000, 033-090-011-000, 033-090-012-000, 033-090-013-000, 033-090-014-000, 033-090-015-000, 033-020-009-000; and;

WHEREAS, Permittee has applied to the County to construct, drill and operate a new water well as stated in the project application;

WHEREAS, Permittee and/or subsequent owner(s) would be required to and intend to fully comply with all of the terms and conditions of the project as specified in this Conditional Use Permit.

WHEREAS, County, after a review of the project, after preparation and circulation of the Subsequent Environmental Impact Report State Clearinghouse (SCH) No. 2001121133, after a noticed public hearing before the Planning Commission, dated November 16, 2023, the Permittee, and/or his or her successor in interest is subject to the following conditions:

GENERAL CONDITIONS

The "GENERAL CONDITIONS" are shown by the letter **"G".** These conditions are conditions that are either routinely and commonly included in all Conditional Use Permits as "standardized" conditions and/or are conditions that the Imperial County Planning Commission has established as a requirement on all CUP's for consistent application and enforcement. The Permittee is advised that the General Conditions are as applicable as the SITE SPECIFIC conditions!

G-1: GENERAL LAWS:

The Permittee shall comply with any and all local, state, and/or federal laws, rules, regulations, ordinances, and/or standards as they may pertain to this project whether specified herein or not (including but not limited to Division 21 and 22 of the Imperial County Land Use Ordinance).

G-2: PERMIT/LICENSE:

Permittee shall obtain any and all permits, licenses, and/or approvals, for the construction and/or operation of this project. This shall include, but shall not be limited to, County Division of Environmental Health Services (EHS), Planning & Development Services Department, Fire/Office of Emergency Services (OES), Colorado River Board of California, RWQCB, and Public Works Department. Permittee shall likewise comply with all such permit requirements for the life of the project. Additionally, Permittee shall submit a copy of such additional permit and/or licenses to the Planning & Development Services Department within 30-days of receipt, including amendments or alternatives thereto, if requested.

G-3: RECORDATION:

This permit shall not be effective until it is recorded at the Imperial County Recorders Office, and payment of the recordation fee shall be the responsibility of the Permittee. If the Permittee fails to pay the recordation fee within six (6) months from the date of approval, and/or this permit is not recorded within 180 days from the date of approval, this permit shall be deemed null and void, without notice having to be provided to Permittee. Permittee may request a written extension by filing such a request with the Planning Director at least 30 days prior to the original 180-day expiration. The Director may approve an extension for a period not to exceed 180 days. An extension may not be granted if the request for an extension is filed after the expiration date.

G-4: CONDITION PRIORITY:

This project shall be constructed and operated as described in the Conditional Use Permit application, the Environmental Assessment, the project description, and as specified in these conditions. Where a conflict occurs, the Conditional Use Permit conditions shall govern and take precedence.

G-5: INDEMNIFICATION:

As a condition of this Permit, Permittee agrees to defend, indemnify, hold harmless, and release the County, its agents, officers, attorneys, and employees from any claim, action, or proceeding brought against any of them, the purpose of which is to attack, set aside, void, or annul the Permit or adoption of the environmental document which accompanies it. This indemnification obligation shall include, but not be limited to, damages, costs, expenses, attorneys fees, or expert witness fees that may be asserted by any person or entity, including the Permittee, arising out of or in connection with the approval of this Permit, whether or not there is concurrent, passive or active negligence on the part of the County, its agents, officers, attorneys, or employees.

G-6: RIGHT OF ENTRY:

The County reserves the right to enter the premises at any time, announced or unannounced, in order to make the appropriate inspection(s) and to determine if the condition(s) of this permit are complied with. Access to authorized enforcement agency personnel shall not be denied.

G-7: SEVERABILITY:

Should any condition(s) of this permit be determined by a Court or other agency with proper jurisdiction to be invalid for any reason, such determination shall not invalidate the remaining provision(s) of this permit.

G-8: PROVISION TO RUN WITH LAND:

The provisions of this project are to run with the land/project and shall bind the current and future owner(s) successor(s)-in-interest; assignee(s) and/or transferee(s) of said project. Permittee shall not without prior notification to the Planning and Development Services Department assign, sell, or transfer, or grant control of project or any right or privilege therein. The Permittee shall provide a minimum of 60 days written notice prior to such proposed transfer becoming effective. The permitted use identified herein is limited for use upon this parcel described herein and may not be transferred to another parcel.

G-9: COMPLIANCE/REVOCATION:

Upon the determination by the Planning and Development Services Department that the project is or may not be in full compliance with any one or all of the conditions of this Conditional Use Permit, or upon the finding that the project is creating a nuisance as defined by law, the issue shall be brought immediately to the appropriate enforcement agency or to the Planning Commission for hearing to consider appropriate response including but not limited to the revocation of the CUP or to consider possible amendments to the CUP. The hearing shall be held upon due notice having been provided to the Permittee and to the public in accordance with established ordinance/policy.

G-10: TIME LIMIT:

Unless otherwise specified within the project specific conditions this project shall be limited to a maximum of (3) three years from the recordation date of the CUP. The CUP may be extended for successive three (3) year(s) by the Planning Director upon a finding by the Planning & Development Services Department that the project is in full and complete compliance with all conditions of the CUP and any applicable land use regulation(s) of the County of Imperial. Unless specified otherwise herein no conditional use permit shall be extended for more than four (4) consecutive periods. If an extension is necessary or requested beyond fifteen (15) years, Permittee shall file a written request with the Planning Director for a hearing before the Planning Commission. Such request shall include the appropriate extension fee. An extension shall not be granted if the project is in violation of any one or all of the conditions or if there is a history of non-compliance with the project conditions.

G-11: COSTS:

Permittee shall pay any and all amounts determined by the County to defray any and all cost(s) for the review of reports, field investigations, monitoring, and other activities directly related to the enforcement/monitoring for compliance of this Conditional Use Permit, County Ordinance or any other applicable law. Any billing against this project, now or in the future, by the Planning and Development Services Department or any County Department for costs incurred as a result of this Permit, shall be billed through the Planning and Development Services Department.

G-12: WATER AND SEWER:

Permittee shall provide water and sewer to Federal, State and County standards. Water and sewer systems shall be approved by the Environmental Health Services and the Planning and Development Services Department.

G-13: DEFINITIONS:

In the event of a dispute, the meaning(s) or intent of word(s) phrase(s) and/or conditions or sections herein shall be determined by the Planning Commission of Imperial County. Their determination shall be final unless an appeal is made to the Board of Supervisors 10 days from the date of their decision.

G-14: SPECIFICITY:

The issuance of this permit does not authorize the Permittee to construct or operate this project in violation of any state, federal, local law nor beyond the specified boundaries of the project as shown the application/project description/permit, nor shall this permit allow any accessory or ancillary use not specified herein. This permit does not provide any prescriptive right or use to the Permittee for future addition and/or modification to this project.

G-15: HEALTH HAZARD:

If the County Health Officer determines that a significant health hazard exists to the public, the County Health Officer may require appropriate measures and the Permittee shall implement such measures to mitigate the health hazard. If the hazard to the public is determined to be imminent, such measures may be imposed immediately and may include temporary suspension of the subject operations. However, within 45 days of any such suspension of operations, the measures imposed by the County Health Officer must be submitted to the Planning Commission for review, and nothing shall prohibit Permittee from requesting a special Commission meeting and Permittee bears all costs.

G-16: CHANGE OF OWNER/OPERATOR:

In the event the ownership of the site or the operation of the site transfers from the current Permittee to a new successor Permittee, the successor Permittee shall be bound by all terms and conditions of this Permit as if said successor was the original Permittee. Current Permittee shall inform the County Planning and Development Services Department in writing at least 60 days prior to any such transfer. Failure of a notice of change of ownership or change of operator shall be grounds for the immediate revocation of the CUP. In the event of a change, the new Owner/Operator shall file with the Department, via certified mail, a letter stating that they are fully aware of all conditions and acknowledge that they will adhere to all. If this Permit or any subservient or associated permit requires financial surety, the transfer of this Permit shall not be effective until the new Permittee has requisite surety on file. Furthermore, existing surety shall not be released until replacement surety is accepted by Imperial County. Failure to provide timely notice of transfer by Permittee shall forfeit current surety.

G-17: COMMENCEMENT OF WORK:

No commencement of work until all conditions pursuant to the CUP has been satisfied. Evidence that all conditions pursuant to the CUP have been satisfied shall be provided to the Planning Director prior to commencement.

(TOTAL “G” CONDITIONS are 17)

WATER WELL SPECIFIC CONDITIONS

S–1: WATER USAGE:

This permit allows the Permittee to drill and operate a new water well, which will supply water for the purposes of dust control, irrigation of revegetation during reclamation, and possibly potable water for employee use, and will extract up to 26 acre-feet of water per year. In the event this land is sold to another owner, then the 26 acre-feet limit shall be the maximum that can be pumped from this well by this CUP.

S–2: OFF-SITE WATER SALES:

Water from the wells shall **not** be used, sold, nor given to any individuals or entities and used for the purpose as identified in the project description.

S–3: WATER WELL MONITORING:

A flow meter shall be installed and sealed by a California-Licensed Water Well Drilling Contractor. Permittee shall submit a drilling and logging report every six (6) months to the Department of Public Works and the Planning and Development Services Department indicating the amount of water extracted from the well. A photograph (dated and signed) of the flow meter readings shall be included in the report. The report shall be received within thirty (30) days following the date of the issuance of the Conditional Use Permit and the well is spudded. In the event of a flow meter failure, the Permittee shall be required to cease the water well operation and notify the Planning and Development Services Department. The Permittee may be allowed to temporarily substitute the flow meter for an alternative measuring device with the approval of the Planning and Development Services Department.

S–4: WELL REPLACEMENT:

Any replacement water well shall be constructed by a California Licensed Driller in accordance with California Department of Water Resources Bulletin 74-81 and 74-90 (including any subsequent revisions), and with the Imperial County Water Well Ordinance, Section 92101.00, et seq.

Permittee shall submit copies of the "Report of Completion" (as required by California Water Code, Section 13751), by a California Licensed Water Well Driller on the construction of any water well replaced. Copies of this report shall be submitted to Environmental Health Services, Planning and Development Services Department, and Public Works Department within thirty (30) days of the construction or destruction of the well. This report shall include:

1. A description of the exact location of the well;
2. A detailed log of the well;
3. A description of the type and depth of casings;
4. Details of perforation;
5. The methods used for sealing off surface or contaminated water;
6. Methods for preventing contaminated waters from one aquifer to mix with another aquifer.
7. Name of person who constructed the well.

S-5: NO SLANT DRILLING:

This permit does not authorize Permittee to "slant drill" under adjoining property.

S-6: WELL ABANDONMENT:

Should the water well be "abandoned" at any time for more than twenty-four (24) consecutive months, Permittee shall seal/cap the well according to standards set by the State and in a manner acceptable to the County Building Official.

(Abandonment shall mean as follows:)

> **ABANDONMENT**: A well is deemed "abandoned" when it has not been used for one (1) year. An owner may have the well deemed "inactive" by filling a written notice with the Imperial County Planning and Development Services Department stating his/her intentions to use the well under specific conditions and/or time frames. As evidence of his/her intentions, the conditions contained in Bulletin 74-81 (Sec. 21) shall be met. Any well that is open or whose services/operating equipment (e.g., pumps/motors/pipes, etc.) has been removed shall be deemed abandoned.

S-7: WELL REMOVAL:

Permittee shall properly destroy any well on the property if replaced or abandoned. The well shall be destroyed according to State standards and in a manner acceptable to the County Building Official. A copy of the well driller's report by a California State Licensed Water Well Drilling Contractor shall be sent to the Department of Public Works and the Planning and Development Services Department within thirty (30) days following the destruction of the water well.

S-8: WELL REGISTRATION:

The water well shall be registered with the Planning and Development Services Department to comply with the existing Groundwater Management Ordinance. This Ordinance was enacted by the Board of Supervisors for the purpose of preserving, protecting, and managing groundwater resources in Imperial County.

S-9: WATER ENTITLEMENT:

The groundwater at the subject project site has been determined to be Colorado River Water. Prior to any well construction, the Permittee must obtain a water entitlement or make arrangements to use another entity's water entitlement. Based on the proposed location of the new well, within the Imperial Irrigation District water service area and within the Lower Colorado Water Supply Project accounting surface area, subject water proposed to be extracted is entitled Colorado River water. As such, Permittee is not authorized for water extraction and shall not extract any groundwater without the Permittee first obtaining entitlement or a Water Supply Agreement from US Bureau of Reclamation (its authorized agents) or Imperial Irrigation District.

S-10: PERMITTING:

The Permittee shall obtain all required permits from the Department of Public Works, Department of Environmental Health Services (EHS), Air Pollution Control District (APCD), Imperial Irrigation District (IID) and other applicable federal and state agency(s).

S-11: ARCHAEOLOGICAL RESOURCES/HUMAN REMAINS (HSC SECTION 7051 & PRC SECTION 5097.98):

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of Imperial County has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code that the remains are not subject to the provision of Section 27491 of the Government Code. If the Coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission.

Upon discovery of Native American remains, the landowner shall ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located, is not damaged or disturbed by further development activity until the landowner has discussed and conferred, as prescribed in this section, with the most likely descendants regarding their recommendation, if applicable, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

S-12: ENVIRONMENTAL HEALTH SERVICES:

1. A well construction design must be submitted by a California-licensed (C57 License) well driller for review and approval by the Local Primacy Agency (LPA) (DEH). Well drilling specification must be provided. All wells must be drilled in compliance with the Department of Water Resources Bulletin 74-81 and 74-90 Water Well Standards, and shall include a minimum 50-foot deep sanitary seal. Above ground features shall also be indicated for the well in accordance with Part II, Section 10 of the California Water Well Standards.

2. The water supplied from the well shall comply with the Primary and Secondary Drinking Water Standards in Title 22, California Code of Regulations. A water treatment system approved by the LPA shall be installed to treat the groundwater supply to meet potable water standards, if deemed necessary.

3. Submit a complete and correct Well Driller's Report to the LPA once the well has been drilled.

4. The water well must serve as a primary well since the existing well is currently not meeting water well standards (does not have a minimum 50 ft. sanitary seal).

S-13: AIR POLLUTION CONTROL DISTRICT:

All earthmoving and construction activities shall adhere to Regulation VIII which is designed to mitigate fugitive dust during construction activities, and if any generators above 50 horsepower are used on site either during construction or operation, the Permittee needs to secure the proper permit from the Air District's Engineering and Permitting Division.

S-14: IMPERIAL IRRIGATION DISTRICT:

To obtain electrical service for the proposed well pump #3, the Permittee shall contact Gabriel Ramirez, IID Service Planner, at (760) 339-9257 or e-mail Mr. Ramirez at gramirez@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the Permittee shall submit pump specifications: horsepower, operating voltage, pump starter information; AutoCAD site plan, drawings, proposed power line that will serve the well pump, and the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of electrical service to the project. The Permittee shall be responsible for all costs and mitigation measures related to providing new electrical service to the project. Electrical capacity is limited in the project area. A circuit study may be required. Any system improvements or mitigation identified in the circuit study to enable the provision of electrical service to the project shall be the financial responsibility of the applicant.

Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to surface improvements such as proposed streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instruction are available at http://www/iid.com/departments/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements.

S-15: IMPERIAL COUNTY EXECUTIVE OFFICE:

Sales Tax Condition. The Permittee shall have a Construction Site Permit reflecting the project site address, allowing all eligible sales tax payments to be allocated to the County of Imperial, Jurisdictional Code 13998. The Permittee shall provide the County of Imperial a copy of the CDTFA account number and sub-permit for its contractor and subcontractor (if any) related to the jobsite. Prior to the issuance of grading permits for Well No. 3, the Permittee shall provide written verification to the County Executive Office that the necessary sales and use tax permits have been obtained.

Construction/Material Budget. Prior to a grading permit, the Permittee shall provide the County Executive Office a construction materials budget: an official construction materials budget or detailed budget outlining the construction and materials cost for the processing facility on Permittee letterhead.

The proposed project is subject to IID's Interim Water Supply Policy. To obtain a water supply from IID for a non-agricultural project, the Permittee shall comply with all applicable IID policies and regulations and is required to enter into a water supply agreement. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the project, including potential impacts to the Salton Sea as a result of reduced drainage flow, be adequately assessed and appropriate mitigation developed if warranted, including any necessary approval conditions adopted by the relevant land use and permitting agencies.

IID has implemented a water supply apportionment program pursuant to IID's revised Equitable Distribution Plan, which the project is subject to including any amending or superseding policy for the same or similar purposes, during all or any part of the term of said water supply agreement, IID shall have the right to apportion the Project's water as an industrial water user. For more information on how to obtain a water supply agreement, the permittee is directed to visit IID's website at https://www.iid.com/water/municipal-industrial-and-commercial-customers or contact Justina Gamboa-Arce at (760) 339-9085 or jgamboaarce@iid.com.

The Permittee shall obtain an IID Encroachment Permit for a pump to place on the Westside Main Canal.

Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; shall require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions for its completion are available at https://www.iid.com/about-iid/department-directory/real-estate. The Permittee shall contact IID Real Estate Section at (760) 339-9239 for additional information regarding encroachment permits or agreements. No foundations or buildings will be allowed within IID's right of way.

In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of way to ensure that operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted, mitigated. Thus, the Permittee shall consult IID 7 prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.

S-16: CALTRANS:

The Permittee shall consult with Caltrans regarding highways under its jurisdiction. The Permittee shall review the following website for applicable requirements: http://www.dot.ca.gov/trafficops/permits/index.html

(TOTAL "S" CONDITIONS are 16)

NOW THEREFORE, County hereby issues Conditional Use Permit #20-0016 and Permittee hereby accepts such permit upon the terms and conditions set forth herein.

IN WITNESS THEREOF, the parties hereto have executed this Agreement the day and year first written.

PERMITTEE

By: ______________________________ ____________________

U.S. Gypsum *Date*

COUNTY OF IMPERIAL, a political subdivision of the STATE OF CALIFORNIA:

By: ______________________________ ____________________

James Minnick, Director *Date*

Planning & Development Services Department

FOR PERMITTEE NOTARIZATION

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA COUNTY OF ________________________________ S.S.

On_________________ before me, ______________________________________,

a Notary Public in and for said County and State, personally appeared ____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under **PENALTY OF PERJURY** under the laws of the State of California that the foregoing is true and correct.

WITNESS my hand and official seal

Signature__________________________________

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document____

Number of Pages __________ Date of Document___________________________

Signer(s) Other Than Named Above_______________________________________

FOR COUNTY NOTARIZATION

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA COUNTY OF ________________________________ S.S.

On________________ before me, ____________________________________,

a Notary Public in and for said County and State, personally appeared ____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under **PENALTY OF PERJURY** under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal

Signature_____________________________

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to unauthorized document.

Title or Type of Document____

Number of Pages __________ Date of Document__________________________

Signer(s) Other Than Named Above____________________________________

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