PROJECT REPORT

TO: ENVIRONMENTAL EVALUATION COMMITTEE **AGENDA DATE: April 25, 2019**

FROM: PLANNING & DEVELOPMENT SERVICES **AGENDA TIME 1:30 PM/ No. 3**

Conditional Use Permit #19-0005

PROJECT TYPE: Palo Verde Water Wells Replacement Project SUPERVISOR DIST # 5

LOCATION: 572 Ben Hulse Highway, APN: 006-120-089-000

Palo Verde, CA 92266 PARCEL SIZE: +/- 1,389 acres

GENERAL PLAN (existing) Agriculture GENERAL PLAN (proposed) N/A

ZONE (existing) A-2 (General Agriculture) ZONE(proposed) N/A

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

PLANNING COMMISSION DECISION: HEARING DATE: N/A

☐ APPROVED ☐ DENIED ☐ OTHER

PLANNING DIRECTORS DECISION: HEARING DATE: N/A

☐ APPROVED ☐ DENIED ☐ OTHER

ENVIROMENTAL EVALUATION COMMITTEE DECISION: HEARING DATE: 04/25/19

INITIAL STUDY: 19-0006

☐ NEGATIVE DECLARATION ☐ MITIGATED NEG. DECLARATION ☐ EIR

DEPARTMENTAL REPORTS / APPROVALS:

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

OTHER None

REQUESTED ACTION:

(See Attached)

Planning & Development Services
801 MAIN ST., EL CENTRO, CA, 92243 442-265-1736
(Jim Minnick, Director)

☐ NEGATIVE DECLARATION
☐ MITIGATED NEGATIVE DECLARATION

Initial Study & Environmental Analysis
For:

Palo Verde County Water District (PVCWD) Water Wells Replacement Project
Conditional Use Permit #19-0005 & Initial Study #19-0006

Prepared By:

COUNTY OF IMPERIAL
Planning & Development Services Department
801 Main Street
El Centro, CA 92243
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April 2019

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SECTION 1
INTRODUCTION

A. PURPOSE

This document is a ☐ policy-level, ☒ project level Initial Study for evaluation of potential environmental impacts resulting with the proposed Palo Verde County Water District (PVCWD) Water Wells Replacement Project. (Refer to Exhibit "A" & "B").

B. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) 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.

☐ According to Section 15070(a), a **Negative Declaration** is deemed appropriate if the proposal would not result in any significant effect on the environment.

☐ According to Section 15070(b), a **Mitigated Negative Declaration** is deemed appropriate if it is determined that though a proposal could result in a significant effect, mitigation measures are available to reduce these significant effects to insignificant levels.

This Initial Study has determined that the proposed applications will not result in any potentially significant environmental impacts and therefore, a Negative Declaration is deemed as the appropriate document to provide necessary environmental evaluations and clearance as identified hereinafter.

This Initial Study and Negative Declaration are 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 AND NEGATIVE DECLARATION

This Initial Study and Negative Declaration are informational documents which are 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.

The Initial Study and Negative Declaration, prepared for the project will be circulated for a period of 20 days (*30-days if submitted to the State Clearinghouse for a project of area-wide significance*) for public and agency review and comments. At the conclusion, if comments are received, the County Planning & Development Services Department will prepare a document entitled "Responses to Comments" which will be forwarded to any commenting entity and be made part of the record within 10-days of any project consideration.

D. CONTENTS OF INITIAL STUDY & NEGATIVE DECLARATION

This Initial Study is organized to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

SECTION 1

I. INTRODUCTION presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

SECTION 2

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 significant impact, potentially significant impact, or no impact.

PROJECT SUMMARY, LOCATION AND EVIRONMENTAL 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.

ENVIRONMENTAL ANALYSIS 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.

SECTION 3

III. MANDATORY FINDINGS presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

IV. PERSONS AND ORGANIZATIONS CONSULTED identifies those persons consulted and involved in

preparation of this Initial Study and Negative Declaration.

V. REFERENCES lists bibliographical materials used in preparation of this document.

VI. NEGATIVE DECLARATION – COUNTY OF IMPERIAL

VII. FINDINGS

SECTION 4

VIII. RESPONSE TO COMMENTS (IF ANY)

IX. MITIGATION MONITORING & REPORTING PROGRAM (MMRP) (IF ANY)

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:

1. **No Impact:** A "No Impact" response is adequately supported if the impact simply does not apply to the proposed applications.

2. **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.

3. **Less Than Significant With Mitigation Incorporated:** This applies where incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".

4. **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 and Negative Declaration 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:

(1) Were not examined as significant effects on the environment in the prior EIR; or

(2) 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

1. **Project Title**: Palo Verde County Water District (PVCWD) ("District") Water Wells Replacement Project – Conditional Use Permit (CUP) #19-0005 Initial Study (IS) #19-0006
2. **Lead Agency**: Imperial County Planning & Development Services (ICPDS) Department
3. **Contact person and phone number**: Diana Robinson, Planner III, (442)265-1736, ext. 1751
4. **Address**: 801 Main Street, El Centro CA, 92243
5. **E-mail**: dianarobinson@co.imperial.ca.us
6. **Project location**: 572 Ben Hulse Highway, Palo Verde, California, 92266, also identified as Assessor's Parcel Number (APN) 006-120-089-000
7. **Project sponsor's name and address**: Imperial County Community and Economic Development (ICCED) on behalf of Palo Verde County Water District (PVCWD); 1065 Desert View, Palo Verde California, 92266
8. **General Plan designation**: Agriculture
9. **Zoning**: A-2 (General Agriculture)
10. **Description of project**: The applicant proposes to replace two (2) existing water wells with two (2) new water wells (with all associated appurtenances, including electrical components) within the Palo Verde Water Treatment Plant and Distribution System, which is a public water system that is classified as a Community Water System that supplies treated groundwater to a small community consisting of 124 residential service connections, 7 commercial businesses, one multi-family property and the County Park located south of the Water Treatment Plant.

    Both water wells appear to have been built in the early 1980's. Since 2014, one of the wells, the south well, due to malfunctioning has remained physically disconnected from the treatment plant, so the north well is the only water source for the community, and it has reached its life expectancy and could fail at any time. This causes for the District to be in violation with the Imperial County Division of Environmental Health, Local Primacy Agency (LPA). Additionally, the well is not considered a residential use well but rather an agricultural well. Since the wells are the sole water supply to Palo Verde, the applicant is proposing to replace both wells through a sequence of construction events, where the southerly well would be demolished first and replaced with a new 160-foot deep well, and after this has been approved by Imperial County Public Health Department, the northerly well would be demolished and replaced with a new 160-foot deep well as well, so that no water supply is interrupted. Shade structures over the new wells are also being proposed

    This CUP would help address some of the violations identified by the LPA as outlined in Compliance Order No. 15-43-15R-001 in December of 2015. All work is to be completed in accordance with the standards outlined in Imperial County Land Use Ordinance Division 21 Section 92103.02, such as the California Department of Water Resources, Imperial County Public Health Department, State codes and applicable regulations.

11. **Surrounding land uses and setting**: The Palo Verde Water Treatment System facility is located east of the Ben Hulse Highway (State Route 78), approximately 1.82 miles southeast of the townsite of Palo Verde, and approximately 2 miles south of Imperial County limits. The parcel is approximately 400-feet west of the California and Arizona limits. The Palo Verde County Park is part of this parcel and is less than half a mile southeast from the project site. The rest of the parcel and some of the neighboring parcels appear to be used for agricultural purposes. The site is approximately 30-feet west of the Oxbow Lake, which is supplied with water from the Colorado River. Neighboring parcels share the General Plan designation of Agriculture. ICPDS' Zoning Map #57 shows that surrounding parcels are zoned either G/S (Government/Special) or S-1 (Open Space/Recreation). The project site is rarely accessed but for maintenance purposes.

12. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.): Planning Commission

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.

    Native American Tribes and members of the Native American Heritage Commission (NAHC) have been invited to participate in the "Request for Review and Comment" as part of the Initial Study review process. In addition, letters requesting consultation pursuant to AB 52 were also sent at the beginning of the preparation of this Initial Study, along with a request to NAHC for Sacred Files Search. The consultation period for AB 52 will end on April 26, 2019.

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 and 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

ENVIRONMENTAL EVALUATION COMMITTEE (EEC) 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. An 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, because 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

EEC VOTES	YES	NO	ABSENT
PUBLIC WORKS	☐	☐	☐
ENVIRONMENTAL HEALTH SVCS	☐	☐	☐
OFFICE EMERGENCY SERVICES	☐	☐	☐
APCD	☐	☐	☐
AG	☐	☐	☐
SHERIFF DEPARTMENT	☐	☐	☐
ICPDS	☐	☐	☐

Jim Minnick, Director of Planning/EEC Chairman Date:

PROJECT SUMMARY

A. **Project Location**: 572 Ben Hulse Highway, Palo Verde, California, 92266; also identified as Assessor's Parcel Number (APN) 006-120-089-000.

B. **Project Summary**: The applicant proposes to replace two (2) existing water wells with two (2) new water wells. These wells are part of the Palo Verde Water Treatment Plant and Distribution System, which supplies water to approximately 124 single family residences, 7 commercial businesses, one multi-family property and the Palo Verde County Park. The installation of the new water wells and destruction of the existing water wells is required due to the discontinued use of one of the wells and because the life expectancy of the other well has reached its limits. All work is to be completed in accordance with the standards outlined in Imperial County Land Use Ordinance Division 21 Section 92103.02, the California Department of Water Resources, Imperial County Public Health Department, State codes and applicable regulations.

   An Environmental Assessment was prepared in October 2014 for the "Palo Verde Water System Improvements Project" which consisted of upgrading the Palo Verde Water System by addressing components such as the water wells, water storage tanks, the water treatment system, cross connection controls, pump station, and the water filter. From the implementation of those improvements, the water treatment facility has needed additional repairs and replacement works, which this Initial Study has environmentally assessed.

C. **Environmental Setting**: The Palo Verde Water Treatment System facility is located east of the Ben Hulse Highway (State Route 78), approximately 1.82 miles southeast of the townsite of Palo Verde, and approximately 2 miles south of Imperial County limits. The parcel is approximately 400-feet west of the California and Arizona limits. The Palo Verde County Park is part of this parcel and is less than half a mile southeast from the project site. The rest of the parcel and some of the neighboring parcels appear to be used for agricultural purposes. The site is approximately 30-feet west of the Oxbow Lake, which is supplied with water from the Colorado River. Neighboring parcels share the General Plan designation of Agriculture. ICPDS' Zoning Map #57 shows that surrounding parcels are zoned either G/S (Government/Special) or S-1 (Open Space/Recreation). The project site is rarely accessed but for maintenance purposes.

D. **Analysis**: The project site is zoned A-2 (General Agricultural) per Zoning Map #57 (Title 9, Section 92557.00), which allows for water treatment plants with an approved Conditional Use Permit. The proposed project involves an existing Community Water Supply Well as defined in Chapter 7 of Part I of Division 5 of the California Health and Safety Code (Section 4010 et. seq.), and Section 92101.01 D. of the Land Use Ordinance. The proposed application is consistent with the Imperial County General Plan's designation, the Imperial County's Land Use Ordinance Division 5 Zoning Areas Established, Division 21 Water Well Regulation and Division 22 Groundwater Ordinance. In addition to processing a Conditional Use Permit for the new water wells, a well construction permit shall be required pursuant to Section 92102.00 B., of the I.C. Land Use Ordinance through the I.C. Planning and Development Services Department. The adoption of the CEQA Initial Study for this project would be consistent with applicable County and State ordinances and regulations.

E. **General Plan Consistency**: The project site is designated as "Agriculture", according to the County's General Plan Land Use Map. The proposed project is not expected to conflict with the County's General Plan.

Exhibit "A"
Vicinity Map

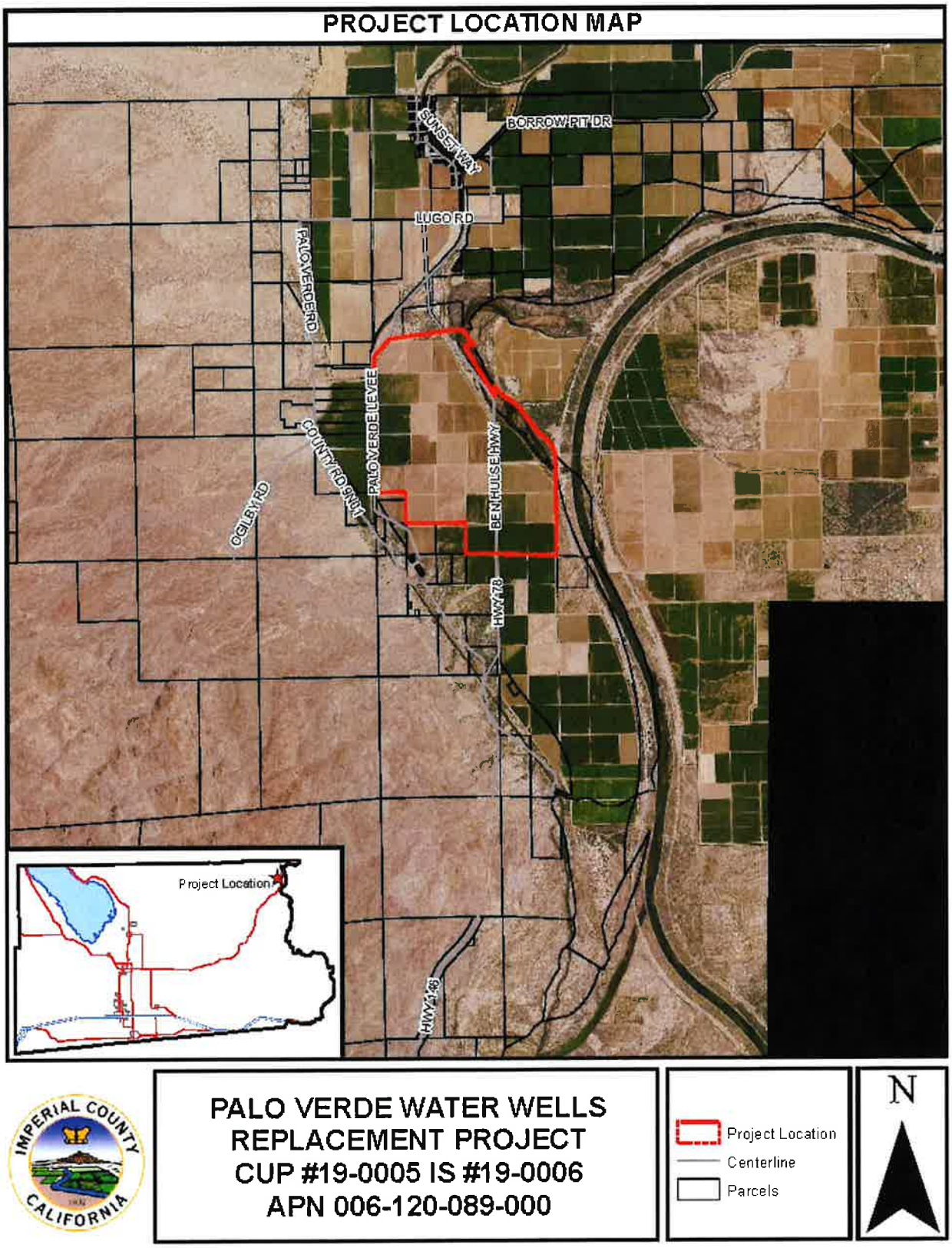
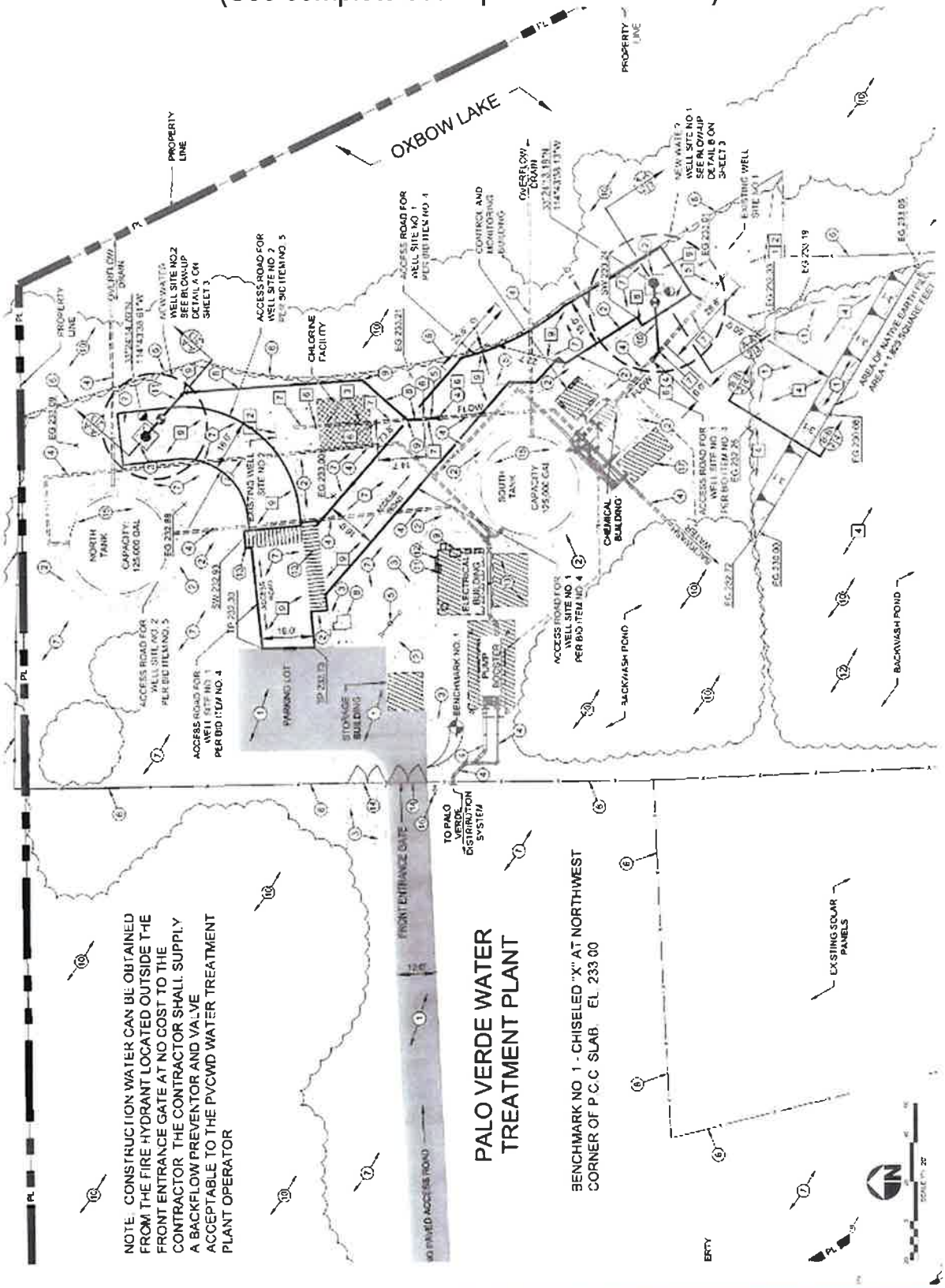


Exhibit "B"
Enlarged Site Plan
(See complete set of plans for reference)



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

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

I. *AESTHETICS*

Except as provided in Public Resources Code Section 21099, would the project:

a) Have a substantial adverse effect on a scenic vista or scenic highway? ☐ ☐ ☒ ☐

a) The project is not located near a designated scenic vista or scenic highway according to the Imperial County Circulation & Scenic Highways Element. The project site has two existing water wells and the project consists of replacing them with new ones and relocating them within the project site boundaries; therefore, the existing vista would not be significantly altered. Less than significant impacts are expected.

b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway? ☐ ☐ ☐ ☒

b) The nearest highway is Ben Hulse Highway, also called State Route 78 (SR-78). According to the Imperial County Circulation & Scenic Highways Element, a portion of SR-78 is considered eligible for future Scenic Highway Designation, but this portion is towards the San Diego County line, on the opposite end of the Imperial County limits, therefore, the portion of the highway near the project site is not considered scenic, and there are no scenic resources nearby; therefore, no impacts are expected.

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? ☐ ☐ ☒ ☐

c) The project is not within an urbanized area, although the water from the water wells is used to supply a residential community nearby. Except for the construction phase, the replacement of the water wells would not cause a permanent visual impact to the surroundings since the wells are underground; therefore, less than significant levels are expected.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? ☐ ☐ ☒ ☐

d) The project is not proposing any new source(s) of lighting, although if any shall be required during construction it shall be installed in accordance to State Codes and County Ordinances, and shall be shielded or directed onsite to minimize offsite interference from unacceptable levels or light or glare. Compliance with said codes and ordinances, if using any new sources of light, would cause for less than significant impacts.

II. *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:

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? ☐ ☐ ☐ ☒

a) The project site appears as "Other Land" according to the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP)[1], and is adjacent by "Farmland of Local Importance". Since the proposed project does not convert prime farmland, unique farmland or farmland of statewide importance (farmland) to non-agricultural use, no impacts are expected.

b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract? ☐ ☐ ☐ ☒

b) The project site is within an area labeled as "Non-Enrolled Land" under the 2016 State of California Williamson Act Contract

[1] California Important Farmland: 1984-2014 Maps https://maps.conservation.ca.gov/agriculture/

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

Land Map[2]; therefore, no impacts are expected.

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))? ☐ ☐ ☐ ☒

c) The project site is not surrounded by forest land(s); therefore, no impacts are expected to occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use? ☐ ☐ ☐ ☒

d) There is no forest land in the area of the project location and no conversion of land to non-forest use would occur as a consequence of the approval of the proposed project; therefore, no impacts would occur.

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? ☐ ☐ ☐ ☒

e) The project site is not classified as Farmland, and the proposed water well replacement project does not include any work that would cause for the conversion to non-agricultural use; therefore, no impacts are expected.

III. *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:

a) Conflict with or obstruct implementation of the applicable air quality plan? ☐ ☐ ☒ ☐

a) The project is already on disturbed land and will benefit the Palo Verde community. Imperial County is designated nonattainment for certain criteria pollutants, although the emissions expected from this project are not expected to exceed the APCD thresholds. The applicant shall contact the I.C. APCD for compliance with their regulations (i.e. Regulation VIII for fugitive dust during the construction phase of the project, if applicable) and in case the equipment needs to meet the California Air Resources Board (CARB) Rules and Regulations for Air Toxic Control Measures (ATCM). Compliance with APCD's regulations would lower potential impacts to less than significant levels.

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? ☐ ☐ ☒ ☐

b) The project consists of demolishing two existing water wells to replace with two new ones. The construction scope of work would be temporary (approximately 2 months). In addition, the removal of the existing wells and the drilling of the new ones would have to be done in accordance to the State of California Department of Water Resources Bulletin 74-81 and 74-90 and with APCD's rules and regulations regarding the standard measures of construction. Compliance with the previous agencies' requirements would bring the potential impacts to less than significant impacts.

c) Expose sensitive receptors to substantial pollutants concentrations? ☐ ☐ ☒ ☐

c) The nearest community is Palo Verde, and it is located approximately 1.80 miles northwest of the project site. The construction phase of the project would be temporary and the operational phase would not release any pollutants, so the impacts regarding exposure of sensitive receptors to substantial pollutants concentrations is less than significant.

d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people? ☐ ☐ ☒ ☐

d) Since the project area is not within the immediate vicinity of people, and no emissions with odors are expected to be released, less than significant impacts are expected.

IV. *BIOLOGICAL RESOURCES Would the project:*

a) Have a substantial adverse effect, either directly or through ☐ ☐ ☒ ☐

[2] State of California Williamson Act Contract Land Map 2016

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

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?

a) The project's scope of work consists of removing and replacing two water wells within the same parcel, which has been disturbed since the early 1980's to serve as the Palo Verde Water Treatment facility. No habitat modifications are expected since the area has already been impacted. After looking at the Imperial County General Plan's Conservation and Open Space Element[3] Figure 2 "Sensitive Species Map", it was found that the project site is within the Burrowing Owl Species Distribution Model. According to a letter from the U.S. Department of the Interior, Fish and Wildlife Service dated September 23, 2013[4], the project site is adjacent to an area which is occupied by two (2) federally endangered species two (2) state endangered species, and a species candidate for Federal Listing, but since no removal of vegetation was anticipated as part of the project, nor did the project involve disturbance or change to the waters, the project was not expected to adversely impact the species. For this project, no removal of vegetation is anticipated nor is change or disturbance to water expected; therefore, less than significant impacts are expected to occur.

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? ☐ ☐ ☒ ☐

b) As previously stated, the project site is adjacent to an area that has sensitive community, but since no removal of vegetation or disturbance to water is expected; less than significant impacts are expected to occur.

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? ☐ ☐ ☐ ☒

c) The project site is not within any area that is considered state of federally protected wetland. The construction impacts are not expected to impact any area besides the one identified on the applicant's site plan, which is not considered wetland. Any water discharged from the facility is designed to drain into a partly lined basin within the property. No impacts are expected.

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? ☐ ☐ ☒ ☐

d) The proposed project is not expected to impact the movement of resident or migratory fish, since the project site has been previously disturbed and the construction activities will be within the project boundaries, which are away from any body of water. Less than significant impacts are expected.

e) Conflict with any local policies or ordinance protecting biological resource, such as a tree preservation policy or ordinance? ☐ ☐ ☐ ☒

e) There are no policies protecting biological resources towards the area of the project; therefore, no impacts are expected.

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? ☐ ☐ ☐ ☒

f) There are no Conservation Plans within the project area; therefore, no impacts are expected.

V. *CULTURAL RESOURCES* *Would the project:*

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? ☐ ☐ ☐ ☒

a) The Imperial County General Plan's Conservation and Open Space Element Figure 6 "Known Areas of Native American Cultural Sensitivity Map"[5] shows that the project site is near a Native American Sacred Site, but not within any area of Cultural Sensitivity. In addition to the standard "Request for review and comment", we sent out letters pursuant to AB52 to tribe

[3] IC General Plan Conservation and Open Space Element Figure 1 http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf
[4] Environmental Assessment prepared in October 2014, US Dept. of the Interior, Fish and Wildlife letter dated 09/24/2013
[5] Imperial County General Plan Conservation and Open Space Element Fig 6 http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

members requesting consultation for this project. A Sacred Lands Search request was also to Native American Heritage Commission (NAHC). Our office has not received any responses; therefore, no impacts are expected.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5? ☐ ☐ ☒ ☐

b) According to the California Tribal Lands Map[6] from the U. S. Environmental Protection Agency and the California Indian Tribal Homelands and Trust Land Map of the U.S. Bureau of Indian Affairs[7], the project site is not within a tribal land. In the event that archaeological resources are discovered during demolition or construction activities, all grading and construction work on the project site shall be suspended until the significance of the features can be determined by a qualified archaeologist, who shall make recommendations for measures necessary to protect any unique resource and County will consider such recommendations and implement them where they are feasible in light of project design as previously approved by the County[8]. Compliance with said conditions will reduce impacts to less than significant.

c) Disturb any human remains, including those interred outside of dedicated cemeteries? ☐ ☐ ☒ ☐

c) The project site is not within a dedicated cemetery and the site has been previously disturbed; however, if human remains are discovered, all work shall be halted immediately and the County Coroner must be notified, according to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission, and the procedures outlined in the CEQA Guidelines of Title 14 of the California Code of Regulations, Section 15064.5(d)[9]. Compliance with said codes in case of discovery would lessen the impacts to less than significant.

VI. *ENERGY Would the project:*

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? ☐ ☐ ☒ ☐

a) The proposed water well replacement project has an electrical component (i.e. motor pumps), but no unnecessary consumption of energy is anticipated during the operational phase of the project. The construction work will be temporary and in phases. Showing compliance with standard construction measures (i.e. making sure no equipment is left idle), and with the latest California Green Building Standards Codes, also known as CalGREEN[10], will lessen potential impacts to less than significant levels.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? ☐ ☐ ☐ ☒

b) The scope of work consists mainly on the replacement of two new wells. No significant amount of energy is expected to be consumed for the operation of the pumps or other electrical components; therefore, no impacts are expected.

VII. *GEOLOGY AND SOILS Would the project:*

a) Directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving: ☐ ☐ ☒ ☐

a) According to the State of California Special Studies Zones Fault Activity Map (2010)[11], the proposed project is not located within a known fault. The water well replacement project shall be done in accordance to the State of California Department of Water Resources Bulletin 74-81 and 74-90, and the latest California Uniform Building Code (Section 1626 through 1635), which requires development to incorporate the most stringent earthquake resistant measures. Adherence with said codes would cause for less than significant impacts.

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 ☐ ☐ ☒ ☐

[6] California Tribal Lands Map https://www3.epa.gov/region9/air/maps/pdfs/air1100040_3.pdf
[7] California Indian Tribal Homelands Map http://www.water.ca.gov/tribal/docs/maps/CaliforniaIndianTribalHomelands24x30_20110719.pdf
[8] Environmental Assessment for HUD-funded Proposals dated October 2014 pages 4 and 5
[9] Environmental Assessment for HUD-funded Proposals dated October 2014 page 5
[10] Environmental Assessment for HUD-funded Proposals dated October 2014, page 16
[11] Fault Activity Map of California (2010) http://maps.conservation.ca.gov/cgs/fam/

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

1) In addition to the statement above, the project does not include any structures for habitable use, so less than significant impacts are expected. Compliance with California Public Resources Codes 2621.5 and 2623 in case of future development would lessen potential impacts to less than significant levels.

2) Strong Seismic ground shaking? ☐ ☐ ☒ ☐

2) The project involves structures that will be placed underground. The only structures being proposed to be above ground are the shade structures to be placed above the water wells. Seismic shaking is not expected to affect these proposed structures. Less than significant impacts are expected.

3) Seismic-related ground failure, including liquefaction and seiche/tsunami? ☐ ☐ ☐ ☒

3) According to the Department of Conservation Regulatory Maps, the project site is not within the designated Tsunami areas; therefore, no impacts are expected.

4) Landslides? ☐ ☐ ☐ ☒

4) Also using the Department of Conservation Regulatory Maps, it was found that the site is not located within a landslide hazard zone; therefore, no impacts are expected.

b) Result in substantial soil erosion or the loss of topsoil? ☐ ☐ ☒ ☐

b) According to the Environmental Assessment prepared in October 2014 for this site, the soils around the project site are classified by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service as meloland fine sandy loam. The USDA indicates that development on meloland fine sandy loam soils is very limited. Even though the site has been previously disturbed and developed, the project shall comply with the adequate building codes to resist soil movement. Compliance with the latest building codes would cause for less than significant impacts to occur.

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? ☐ ☐ ☒ ☐

c) As previously mentioned, the project shall comply with the adequate building codes to resist soil movement. The conditions for landslides, lateral spreading, subsidence, liquefaction or collapse are not present; therefore, less impacts are expected to occur.

d) Be located on expansive soil, as defined in the latest Uniform Building Code, creating substantial direct or indirect risk to life or property? ☐ ☐ ☒ ☐

d) The project site has been previously disturbed and it has not been classified as expansive soil. No habitable structures are being proposed; therefore, less than significant impacts are expected.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? ☐ ☐ ☐ ☒

e) No septic tanks are being proposed and all the water treatment system has underground water lines in place for distribution. No waste water is part of the project; therefore, no impacts are expected.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? ☐ ☐ ☒ ☐

f) The site has been previously disturbed and no paleontological resources have been previously identified. In the event that paleontological resources are discovered during demolition or construction activities, all grading and construction work on the project site shall be suspended until the significance of the features can be determined by a qualified paleontologist, who shall make recommendations for measures necessary to protect any unique resource and County will consider such recommendations and implement them where they are feasible in light of project design as previously approved by the County.[12] Compliance with said codes in case of discovery will lessen impacts to less than significant levels.

[12] Environmental Assessment for HUD-funded Proposals dated October 2014 pages 4 and 5

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

VIII. ***GREENHOUSE GAS EMISSION*** ***Would the project:***

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? ☐ ☐ ☒ ☐

a) The construction work is expected to be temporary (approximately 2 months) and in phases. The daily trips to be performed during this time are not expected to exceed the County agencies' thresholds; therefore, less than significant impacts are expected.

b) Conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ☐ ☐ ☒ ☐

b) There are no plans or policies that apply for this type of project and scope of work. Compliance with the standard construction measures will help reduce the emissions of greenhouse gases, causing for less than significant impacts.

IX. ***HAZARDS AND HAZARDOUS MATERIALS*** ***Would the project:***

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? ☐ ☐ ☒ ☐

a) The project is meant to address some of the violations to the I.C. Environmental Health Services Local Primary Agency (LPA), which have identified chemicals that are not safe for human consumption. The replacement of the water wells will help reduce or eliminate any potential hazardous leaks in chemicals. No new hazardous materials will be used for this project; therefore, less than significant impacts are expected.

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? ☐ ☐ ☐ ☒

b) As stated above, no hazardous materials are included in the proposed project; therefore, no impacts are expected.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? ☐ ☐ ☐ ☒

c) Palo Verde is located in the San Pasqual Valley Unified School District, however, no educational facilities are presently located in Palo Verde. Since the San Pasqual School District is approximately 60 miles away, the Palo Verde Unified School District in Riverside County permits local children to attend schools in the Blythe area, but since no hazardous emissions are anticipated, no impacts are expected.

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? ☐ ☐ ☐ ☒

d) After looking at the EnvironStor Database[13] for the project site, it was found that it was not included in the database; therefore, no impacts are expected to occur.

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? ☐ ☐ ☐ ☒

e) The project site is not within an airport area according to the Imperial County Airport Land Use Compatibility Plan (ALUC Plan); therefore, no impacts are expected to occur.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ☐ ☐ ☒ ☐

[13] EnviroStor Database http://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Sacramento&tour=True

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

f) The proposed project shall comply with all County requirements related to any applicable emergency plan to avoid impairing its implementation. The access points to the existing water treatment system facility would remain the same; therefore, less than significant impacts are expected.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? ☐ ☐ ☒ ☐

g) The project is not in an area that is considered "wildland", and the project proposed underground water wells and two shade structures, which would are highly unlikely to cause a fire. Less than significant impacts are expected.

X. *HYDROLOGY AND WATER QUALITY Would the project:*

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? ☐ ☐ ☒ ☐

a) The Groundwater supply is from the Colorado River, specifically the Oxbow Lake, located approximately 30 feet from the location of the wells. The Palo Verde System uses approximately 35,000 gallons per day which equals 12,775,000 gallons per year or 39.21 Acre Feet of water from the Colorado River. The proximity of the wells to the Colorado River and the minimal amount of water extracted by the wells allows an adequate water supply for the Palo Verde Water Plant with no conditions of overdraft, subsidence, groundwater quality degradation or other environmental damage. Less than significant impacts are expected.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? ☐ ☐ ☒ ☐

b) The amount of water expected to be used per year is considered minimal and is not anticipated to substantially decrease the Colorado River water supply; therefore, less than significant levels are expected.

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: ☐ ☐ ☒ ☐

c) The project would not cause for any drainage patterns to change. The scope of work would take place on disturbed land and any discharge water would drain into an existing basin away from the lake. Less than significant impacts are expected.

(i) result in substantial erosion or siltation on- or off-site; ☐ ☐ ☐ ☒

(i) The project is not expected to cause erosion since the project in anticipated to be performed within already disturbed land. No impacts are expected regarding erosion or siltation.

(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; ☐ ☐ ☒ ☐

(ii) The applicant shall submit a drainage letter for I.C. Public Works' approval and is responsible for making sure that the drainage levels are maintained as per the approved plan to avoid runoff or flooding. The water treatment system has been in place since the early 1980's and the project is meant to improve the water supply to a community; therefore, less than significant impacts are expected.

(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; ☐ ☐ ☒ ☐

(iii) The project is not expected to create runoff water of exceed the stormwater drainage capacity since the project consists of abandoning two wells to build two new ones within the same property boundaries. Compliance with the I.C. Public Works' approved drainage letter, would cause for less than significant impacts are expected.

(iv) impede or redirect flood flows? ☐ ☐ ☒ ☐

(iv) The project is located within 100-year floodplain (Zone A per FIRM Panel 06025C0300C), but since the land has been previously disturbed and the water treatment facility is operational, the project is not expected to impede or redirect flood flows. In addition, the drainage pattern runs to an existing basin, away from the nearest body of water, which is the Oxbow Lake. Less than significant impacts are expected.

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? ☐ ☐ ☐ ☒

d) The water wells replacement project would not include pollutants. The water facility is charged with treating water for a nearby community, so no impacts are expected regarding risk release of pollutants.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? ☐ ☐ ☐ ☒

e) The project is meant to improve the existing water treatment plant and distribution system for the Palo Verde community. No impacts are expected since the rehabilitation of the water wells will be done in phases to avoid interruptions in water supply.

XI. *LAND USE AND PLANNING Would the project:*

a) Physically divide an established community? ☐ ☐ ☐ ☒

a) The project would not physically divide any established community since it is approximately 1.8 miles southeast of an established community in Palo Verde; therefore, no impacts can be expected.

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? ☐ ☐ ☐ ☒

b) The proposed project does not conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect; therefore, no impacts are expected.

XII. *MINERAL RESOURCES Would the project:*

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? ☐ ☐ ☐ ☒

a) The project site area is not located in or near any existing mineral resource areas as shown on the Imperial County Conservation and Open Space Element, Figure 8 "Existing Mineral Resources"[14]; therefore, no impacts are expected.

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? ☐ ☐ ☐ ☒

b) As previously stated, the proposed project would not result in the loss of locally-important mineral resources as identified in the Imperial County General Plan Conservation and Open Space Element, Figure 8 "Existing Mineral Resources". No impacts are expected to occur.

XIII. *NOISE Would the project result in:*

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? ☐ ☐ ☒ ☐

a) The proposed project is expected to temporarily increase noise levels during the construction phase and during visits for maintenance purposes. The activities are expected to occur within business hours, and the noise levels are not expected to exceed the thresholds established in the Imperial County General Plan "Noise Element". The applicant and contractor shall make sure the demolition and drilling of wells do not exceed the Construction Noise Standards of 70 dB Leq, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor[15]. Adherence to the "Noise Element" standards would bring the impacts to a less than significant level.

b) Generation of excessive ground borne vibration or ground borne noise levels? ☐ ☐ ☒ ☐

b) As previously stated, temporary noise levels and vibration could result from the construction phase, but these noise levels

[14] Imperial County Conservation and Open Space Element Figure 8 http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf
[15] Environmental Assessment for HUD-funded Proposals dated October 2014 page 2

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

would have to be maintained within the County's allowed threshold to avoid nuisances regarding excessive ground borne vibration. Construction equipment operation is limited to the hours of 7 am to 7 pm Monday through Friday, and 9 am to 5 pm on Saturdays. No construction shall take place on Sundays[16]. Adherence to the "Noise Element" standards would bring any potential impacts to a less than significant 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? ☐ ☐ ☐ ☒

c) The project site is not located within 2 miles of an airport; therefore, no impacts are expected.

XIV. *POPULATION AND HOUSING* *Would the project:*

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)? ☐ ☐ ☒ ☐

a) The proposed project consists of the rehabilitation of water wells to adequately supply water to the Palo Verde community. This is not expected to cause for unplanned growth, but the Palo Verde community will have the security of having a properly working water supply system. Less than significant impacts are expected.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? ☐ ☐ ☐ ☒

b) Since no housing is being proposed as part of the project; no impacts are expected to occur.

XV. *PUBLIC SERVICES*

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: ☐ ☐ ☒ ☐

a) The project would not cause for the need of any provisions or cause for alterations involving governmental facilities. It would not substantially affect any type of public service, except cause a temporary increase in traffic during the construction phase of the project. Less than significant impacts are to be expected.

1) Fire Protection? ☐ ☐ ☒ ☐

1) The Fire Department was consulted and requested to provide comments on this project. No comments were received. The rehabilitation of the existing water treatment facility would improve the Fire Department's ability to provide services since it would enable both water wells to be available instead of just one as it is to date. Less than significant impacts are expected.

2) Police Protection? ☐ ☐ ☐ ☒

2) No impacts are anticipated regarding an increase in services as a consequence of the approval of this project since no humans are expected to be on site during the operation phase, except during maintenance trips.

3) Schools? ☐ ☐ ☐ ☒

3) There are no schools in the Palo Verde community area. The Palo Verde Unified School District in Riverside County permits local children to attend schools in the Blythe area. No impacts are anticipated regarding increase in school services since the nearest school is in a different County.

4) Parks? ☐ ☐ ☒ ☐

4) The Palo Verde County Park would benefit from this project since it would have a more reliable water supply source. Less than significant impacts are expected since no increase in services to the Park are anticipated.

[16] Environmental Assessment for HUD-funded Proposals dated October 2014 page 2

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)
5) Other Public Facilities?	☐	☐	☐	☒

5) No other public facilities would be affected by the proposed project; therefore, no impacts are expected.

XVI. *RECREATION*

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?	☐	☐	☐	☒

a) The project does not include recreational facilities and would not deteriorate the use of any existing ones. The nearest park is the Palo Verde County Park but it is currently closed; therefore, no impacts are expected.

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?	☐	☐	☐	☒

b) The project does not include recreational facilities; therefore, no impacts are expected.

XVII. *TRANSPORTATION* *Would the project:*

a)	Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐

a) The project does not conflict with a plan, ordinance or policy regarding the circulation system. The only time that the Ben Hulse Highway (State Route 78) is anticipated to be used is during the construction phase of the project, and the amount of daily trips is not expected to exceed the allowable thresholds or cause for a change in the current LOS service; therefore, less than significant impacts are expected.

b)	Would the project conflict or be inconsistent with the CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐

b) The project is less than one-half mile of an existing high quality transit corridor, which is Ben Hulse Highway; therefore, less than significant impacts are expected.

c)	Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒

c) The project involves the demolition of two water wells and build two new ones, which would be underground, so no impacts are expected regarding hazardous design features.

d)	Result in inadequate emergency access?	☐	☐	☐	☒

d) The access point to and from the Palo Verde Water Treatment Facility would not change as a consequence of the approval of this project. The improvements are meant to help the community of Palo Verde receive potable water. No impacts are expected regarding inadequate emergency access.

XVIII. *TRIBAL CULTURAL RESOURCES*

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:	☐	☐	☐	☒

a) The Imperial County General Plan's Conservation and Open Space Element Figure 6 "Known Areas of Native American

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

Cultural Sensitivity Map"[17] shows that the project site is near a Native American Sacred Site, but not within any area of Cultural Sensitivity. In addition to the standard "Request for review and comment", we sent out letters pursuant to AB52 to tribe members requesting consultation for this project. A Sacred Lands Search request was also to Native American Heritage Commission (NAHC). Our office has not received any responses; therefore, no impacts are expected.

(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 ☐ ☐ ☒ ☐

(i) The proposed site does not appear to be eligible under Public Resources Code Section 21074 or 5020.1 (k); therefore, less than significant impacts are to be expected.

(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. ☐ ☐ ☒ ☐

(ii) The Native American Heritage Commission Sacred Lands was contacted for a record search for the area of potential project effect (APE). Our office has not heard back or received a timely response; therefore, less than significant impacts are expected.

XIX. ***UTILITIES AND SERVICE SYSTEMS*** ***Would the project:***

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? ☐ ☐ ☒ ☐

a) The poor condition of the sole operating well and the failure of the other has caused for Palo Verde County Water District to request that a new Conditional Use Permit be processed so that two new water wells could be permitted and built to be able to adequately provide water to the Palo Verde Community. The two new wells are being proposed within the same property but not on the exact locations of the existing ones. Electrical components are also being proposed as part of the water wells, but the scope of work is not expected to cause for 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? ☐ ☐ ☒ ☐

b) The proximity of the wells to the Colorado River and the minimal amount of water extracted by the wells per year (approximately 39.21 acre feet)[18] allows an adequate water supply for the Palo Verde Water Treatment Plant to provide for existing and foreseeable future development within the Palo Verde community. Less than significant impacts are expected.

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? ☐ ☐ ☐ ☒

c) There will be no wastewater as part of this project; therefore, no impacts are anticipated.

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? ☐ ☐ ☒ ☐

d) No solid waste is expected from the proposed project other than the debris from the demolition of the existing wells and other solid waste deriving from the construction of the new wells. All work shall be done per the State of California Department

[17] Imperial County General Plan Conservation and Open Space Element Fig 6 http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf
[18] Email from engineer, James Holt, dated April 2, 2019

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

other solid waste deriving from the construction of the new wells. All work shall be done per the State of California Department of Water Resources Bulletin 74-81 and 74-90, and all waste shall be taken to a County approved landfill. Compliance with said codes and with County requirements regarding solid waste could cause for less than significant impacts are expected.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? ☐ ☐ ☒ ☐

e) As previously mentioned, compliance with the State of California Department of Water Resources Bulletin 74-81 and 74-90 and the building permit requirements (ICPDS) for the proposed construction would cause for potential impacts to be less than significant.

XX. *WILDFIRE*

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan? ☐ ☐ ☒ ☐

a) The project site is located within a Local Responsibility Area (LRA) classified as "Unzoned" according to the Fire Hazard Severity Zone Map.[19] Zones are classified based on a combination of how a fire will behave and the probability of flames and embers threatening buildings, as well of the likelihood of the area burning. Less than significant impacts are to be expected since the area is not within a "high fire hazard severity zone".

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? ☐ ☐ ☒ ☐

b) As previously stated, the project area is not within a "high fire hazard severity zone"; therefore, less than significant impacts are to be expected.

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? ☐ ☐ ☒ ☐

c) No additional infrastructure will be required for the proposed rehabilitation of the water wells. The applicant and contractor shall build in accordance with the County standard construction measures, and in accordance with the State Department of Water. Compliance with said codes could cause for potential impacts to be less than significant.

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? ☐ ☐ ☐ ☒

d) The project is not within a downstream area or an area with landslides; therefore, no impacts are expected.

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

[19] FRAP Fire Hazard Severity Zones http://frap.fire.ca.gov/webdata/maps/imperial/fhszl06_1_map.13.pdf

	Potentially Significant Impact (PSI)	Potentially Significant Unless Mitigation Incorporated (PSUMI)	Less Than Significant Impact (LTSI)	No Impact (NI)

SECTION 3
III. MANDATORY FINDINGS OF SIGNIFICANCE

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

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?**	☐	☐	☐	☐

IV. 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
- Diana Robinson, Planner III
- Imperial County Air Pollution Control District
- Department of Public Works
- Fire Department
- Ag Commissioner
- Environmental Health Services
- Sheriff's Office

B. OTHER AGENCIES/ORGANIZATIONS

- Native American Heritage Commission
- U.S. Fish and Wildlife
- Imperial Irrigation District

(Written or oral comments received on the checklist prior to circulation)

V. REFERENCES

1. California Important Farmland: 1984-2014 Maps https://maps.conservation.ca.gov/agriculture
2. State of California Williamson Act Contract Land Map 2016
3. Imperial County General Plan Conservation and Open Space Element Figure 1
4. Environmental Assessment prepared 10/2014, US Dept. of the Interior, Fish and Wildlife dated 09/24/13
5. Imperial County General Plan Conservation and Open Space Element Figure 6 http://www.icpds.com/CMS/Media/Conservation-&-Open-Space-Element-2016.pdf
6. California Tribal Lands Map https://www3.epa.gov/region9/air/maps/pdfs/air1100040_3.pdf
7. California Indian Tribal Homelands Map http://www.water.ca.gov/tribal/docs/maps/CaliforniaIndianTribalHomelands24x30_20110719.pdf
8. Environmental Assessment prepared October 2014, pages 4 and 5
9. Environmental Assessment prepared October 2014, page 5
10. Environmental Assessment prepared October 2014, page 16
11. Fault Activity Map of California (2010) http://maps.conservation.ca.gov/cgs/fam
12. Environmental Assessment prepared October 2014
13. EnviroStor Database http://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Sacramento&tour=True
14. Imperial County General Plan Conservation and Open Space Element Figure 8
15. Environmental Assessment prepared October 2014
16. Environmental Assessment prepared October 2014
17. Imperial County General Plan Conservation and Open Space Element Figure 6
18. Environmental Assessment prepared October 2014
19. FRAP Fire Hazard Severity Zones http://frap.fire.ca.gov/webdata/maps/imperial/fhszl06_1_map.13.pdf
20. Federal Emergency Management Area (FEMA)

VI. NEGATIVE DECLARATION – County of Imperial

The following Negative Declaration is being circulated for public review in accordance with the California Environmental Quality Act Section 21091 and 21092 of the Public Resources Code.

Project Name: Palo Verde County Water District (PVCWD) ("District") Water Wells Replacement Project – Conditional Use Permit (CUP) #19-0005 Initial Study (IS) #19-0006

Project Applicant: Imperial County Community and Economic Development (ICCED) on behalf of Palo Verde County Water District (PVCWD); 1065 Desert View, Palo Verde California, 92266

Project Location: 572 Ben Hulse Highway, Palo Verde, CA 92266

Description of Project: The applicant proposes to replace two (2) existing water wells with two (2) new water wells (with all associated appurtenances, including electrical components) within the Palo Verde Water Treatment Plant and Distribution System, which is a public water system that is classified as a Community Water System that supplies treated groundwater to a small community consisting of 124 residential service connections, 7 commercial businesses, one multi-family property and the County Park located south of the Water Treatment Plant.

Both water wells appear to have been built in the early 1980's. Since 2014, one of the wells, the south well, due to malfunctioning has remained physically disconnected from the treatment plant, so the north well is the only water source for the community, and it has reached its life expectancy and could fail at any time. This causes for the District to be in violation with the Imperial County Division of Environmental Health, Local Primacy Agency (LPA). Additionally, the well is not considered a residential use well but rather an agricultural well. Since the wells are the sole water supply to Palo Verde, the applicant is proposing to replace both wells through a sequence of construction events, where the southerly well would be demolished first and replaced with a new 160-foot deep well, and after this has been approved by Imperial County Public Health Department, the northerly well would be demolished and replaced with a new 160-foot deep well as well, so that no water supply is interrupted. Shade structures over the new wells are also being proposed

This CUP would help address some of the violations identified by the LPA as outlined in Compliance Order No. 15-43-15R-001 in December of 2015. All work is to be completed in accordance with the standards outlined in Imperial County Land Use Ordinance Division 21 Section 92103.02, such as the California Department of Water Resources, Imperial County Public Health Department, State codes and applicable regulations.

VII. FINDINGS

This is to advise that the County of Imperial, acting as the lead agency, has conducted an Initial Study to determine if the project may have a significant effect on the environmental and is proposing this Negative Declaration based upon the following findings:

☐ The Initial Study shows that there is no substantial evidence that the project may have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☐ The Initial Study identifies potentially significant effects but:

(1) Proposals made or agreed to by the applicant before this proposed Mitigated Negative Declaration was released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur.

(2) There is no substantial evidence before the agency that the project may have a significant effect on the environment.

(3) Mitigation measures are required to ensure all potentially significant impacts are reduced to levels of insignificance.

A NEGATIVE DECLARATION will be prepared.

If adopted, the Negative Declaration means that an Environmental Impact Report will not be required. Reasons to support this finding are included in the attached Initial Study. The project file and all related documents are available for review at the County of Imperial, Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 (442) 265-1736.

NOTICE

The public is invited to comment on the proposed Negative Declaration during the review period.

Date of Determination Jim Minnick, Director of Planning & Development Services

The Applicant hereby acknowledges and accepts the results of the Environmental Evaluation Committee (EEC) and hereby agrees to implement all Mitigation Measures, if applicable, as outlined in the MMRP.

Applicant Signature Date

SECTION 4

VIII. RESPONSE TO COMMENTS

(ATTACH DOCUMENTS, IF ANY, HERE)

Imperial County Planning & Development Services
Planning / Building

Jim Minnick
DIRECTOR

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT
RECEIVED VIA E-MAIL
March 26, 2019

March 26, 2019
REQUEST FOR REVIEW AND COMMENTS

The attached project and materials are being sent to you for your review and as an early notification that the following project is being requested and being processed by the County's Planning & Development Services Department. Please review the proposed project based on your agency/department area of interest, expertise, and/or jurisdiction.

To: County Agencies	State Agencies/Other	Cities/Other
☒ AG – Carlos Ortiz/Sandra Mendivil	☒ Palo Verde Valley District Library-Kim Williams	☒ Fort Yuma Quechan Indian Tribe- Jill McCormick/Jordan D. Joaquin
☒ APCD-Matt Dessert/Monica Soucier	☒ Natural Resources Conserv. Dist.-Sam Cobb	☒ Inter-Tribal Cultural Resource Protection Council-Frank Brown
☒ Public Works – John Gay/Carlos Yee	☒ CalTrans-District 11-Melina Pereira	☒ Kumeyaay Cultural Repatriation Committe
☒ IID Energy Dept.- Donald Vargas	☒ Augustine Band of Cahuilla Mission Indians-Amanda Vance/Karen Kupcha	☒ Manzanita Band of Kumeyaay Nation-Leroy J. Elliott
☒ EHS Office – Jeff Lamoure\Jorge Perez/Alphonso Andrade	☒ Colorado River Indian Tribe-Dennis Patch	☒ La Posta Band of Mission Indians-Gwendolyn Parada
☒ IC Sheriff's Office – Ray Loera/Thomas Garcia	☒ Campo Band of Mission Indians-Ralph Goff	☒ Torres-Martinez Desert Cahuilla Indians-Thomas Tortez/Joseph Mirelez
☒ IC Fire/OES Office –Robert Malek/Andrew Loper	☒ Chemehuevi Reservation-Charles Wood	☒ Native American Heritage Comm.-Katy Sanchez
☒ County Counsel-Adam Crook	☒ Cocopah Indian Tribe-Sherry Cordova	☒ Palo Verde Fire Dept-Alfredo Estrada Jr.
☒ County Executive Office - Esperanza Colio Warren	☒ Ewiiaapaayp Tribal Office-Will Micklin	☒Palo Verde County Water Dist-Kathi Sanders
☒ BOS District #5- Raymond Castillo	☒ CHP-Arturo Proctor	☒ Palo Verde Irrigation District
☒Needles Public Utility Dept.-Rick Daniels	☒CA Dept. of Public Health- Sean Sterchi	☒ Fish & Game Commission-Rosa Lopez
☒ Dept. of Fish & Wildlife(Habitat Conservation Cannabis Program)-Magdalena Rodriguez	☒CA Regional Water Quality Control Board-Nadim-Shukry Zeywar/Doug Wylie	☒Certified Unified Program(CUPA)-Roger Vintze
☒ LAFCO-Jurg Heuberger		

From: Diana Robinson, Planner III - (442) 265-1736 extension 1751 or via-email at CommentLetters@co.imperial.ca.us

Project ID: Conditional Use Permit (CUP) #19-0005/ Initial Study (IS) #19-0006- Palo Verde County Water District

Project Location: The project is located at 572 Ben Hulse Highway, Palo Verde; APN 006-120-089-001.

Project Description: The applicant proposes to replace the (2) two existing water wells with two (2) new water wells. The installation of the new water wells and destruction of the existing water wells is to be completed in accordance with the State of California Department of Water Resources, I.C. Public Health Department, state codes and applicable regulations. These wells are part of the Palo Verde Water Treatment Plant and distribution system, which supplies water to approximately 124 single-family residences, 7 commercial businesses, one multi-family property and the County Park located south of the Water Treatment Plant.

Applicant: Palo Verde County Water District (PVCWD) & Imperial County Community & Economic Development (ICCED)

Your written comments, recommendations, or conditions are requested by the deadline below so that the Director of Planning & Development Services can review them for appropriateness and incorporate it as part of project consideration. Please submit your response to the Case Planner, Jim Minnick, Director, Thank You!

COMMENTS: *(attach a separate sheet if necessary)* (If no comments, please state below and mail, fax, or e-mail this sheet to Case Planner)

NO COMMENT

Name: Monica Soucier Signature: Monica Soucier Title: APC Division Manager

Date: 04/05/2019 Telephone No.: X1800 E-mail: monicasoucier@co.imperial.ca.us

Comments due by: April 5, 2019

EEC Meeting: TBD

801 Main St. El Centro, CA 92243 (442) 265-1736 Fax (442) 265-1735 planninginfo@co.imperial.ca.us www.icpds.com

IX. MITIGATION MONITORING & REPORTING PROGRAM (MMRP)

(ATTACH DOCUMENTS, IF ANY, HERE)

Attachment A.

Initial Study Application and Supporting Documents

CONDITIONAL USE PERMIT

I.C. PLANNING & DEVELOPMENT SERVICES DEPT.
801 Main Street, El Centro, CA 92243 (760) 482-4236

- APPLICANT MUST COMPLETE ALL NUMBERED (black) SPACES – Please type or print -

1. PROPERTY OWNER'S NAME Palo Verde County Water District	EMAIL ADDRESS pvwaterworks@yahoo.com	
2. MAILING ADDRESS (Street / P O Box, City, State) 1065 Desert View, Palo Verde California	ZIP CODE 92266	PHONE NUMBER 760-854-3519
3. APPLICANT'S NAME Palo Verde County Water District/ Imperial County Community & Economic Development	EMAIL ADDRESS tabitavelarde@co.imperial.ca.us	
4. MAILING ADDRESS (Street / P O Box, City, State) 940 W. Main St. Suite 203 El Centro, California	ZIP CODE 92243	PHONE NUMBER 442-265-1100/442-265-1109
4. ENGINEER'S NAME The Holt Group, Inc	CA. LICENSE NO. 31773	EMAIL ADDRESS jack@theholtgroup.net
5. MAILING ADDRESS (Street / P O Box, City, State) 1601 N. Imperial Avenue, El Centro California	ZIP CODE 92243	PHONE NUMBER 760-337-3883

6. ASSESSOR'S PARCEL NO. 006-120-089-000	SIZE OF PROPERTY (in acres or square foot)	ZONING (existing)
7. PROPERTY (site) ADDRESS 572 Ben Hulse Hwy. Palo Verde California 92266		
8. GENERAL LOCATION (i.e. city, town, cross street) In the vicinity of Highway 78 and Butler Rd. northwest corner of Imperial County.		
9. LEGAL DESCRIPTION see attached		

PLEASE PROVIDE CLEAR & CONCISE INFORMATION (ATTACH SEPARATE SHEET IF NEEDED)

10. DESCRIBE PROPOSED USE OF PROPERTY (list and describe in detail) The Palo Verde County Water District Water treatment plant and distribution system supplies water to approximately 124 single family residences, 7 commercial businesses and one multi family property. Please see attached project description.	
11. DESCRIBE CURRENT USE OF PROPERTY	
12. DESCRIBE PROPOSED SEWER SYSTEM	
13. DESCRIBE PROPOSED WATER SYSTEM	
14. DESCRIBE PROPOSED FIRE PROTECTION SYSTEM	
15. IS PROPOSED USE A BUSINESS? ☐ Yes ☐ No	IF YES, HOW MANY EMPLOYEES WILL BE AT THIS SITE?

I / WE THE LEGAL OWNER (S) OF THE ABOVE PROPERTY CERTIFY THAT THE INFORMATION SHOWN OR STATED HEREIN IS TRUE AND CORRECT.

Kathi Frice Sanders — 03-20-2019
Print Name — Date
Kathi Frice Sanders
Signature

Print Name — Date

Signature

REQUIRED SUPPORT DOCUMENTS

A. SITE PLAN
B. FEE
C. OTHER
D. OTHER

APPLICATION RECEIVED BY:	DR.	DATE	03/22/19	REVIEW / APPROVAL BY OTHER DEPT'S required ☐ P. W. ☐ E. H. S. ☐ A. P. C. D. ☐ O. E. S. ☐ _____ ☐ _____
APPLICATION DEEMED COMPLETE BY:		DATE		
APPLICATION REJECTED BY:		DATE		
TENTATIVE HEARING BY:		DATE		
FINAL ACTION: ☐ APPROVED ☐ DENIED		DATE		

CUP # 19-0005

LEGAL DESCRIPTION

A PORTION OF THE NORTHEAST QUARTER OF SECTION 14, TOWNSHIP 9 SOUTH, RANGE 21 EAST OF THE SAN BERNARDINO BASE AND MERIDIAN, IMPERIAL COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 14;

THENCE SOUTH 89 DEGREES 54 MINUTES 07 SECONDS EAST, ALONG THE NORTH LINE OF SAID SECTION 14, A DISTANCE OF 3242.70 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF CALIFORNIA STATE HIGHWAY 78 AS DEFINED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION PER MONUMENTATION MAP RECORDED AS RECORD OF SURVEY IN BOOK 12, PAGE 28, RECORDS OF IMPERIAL COUNTY, AND THE POINT OF BEGINNING;

THENCE CONTINUING SOUTH 89 DEGREES 54 MINUTES 07 SECONDS EAST ALONG SAID NORTH LINE, A DISTANCE OF 446.17 FEET;

THENCE SOUTH 25 DEGREES 17 MINUTES 05 SECONDS EAST, A DISTANCE OF 545.76 FEET;

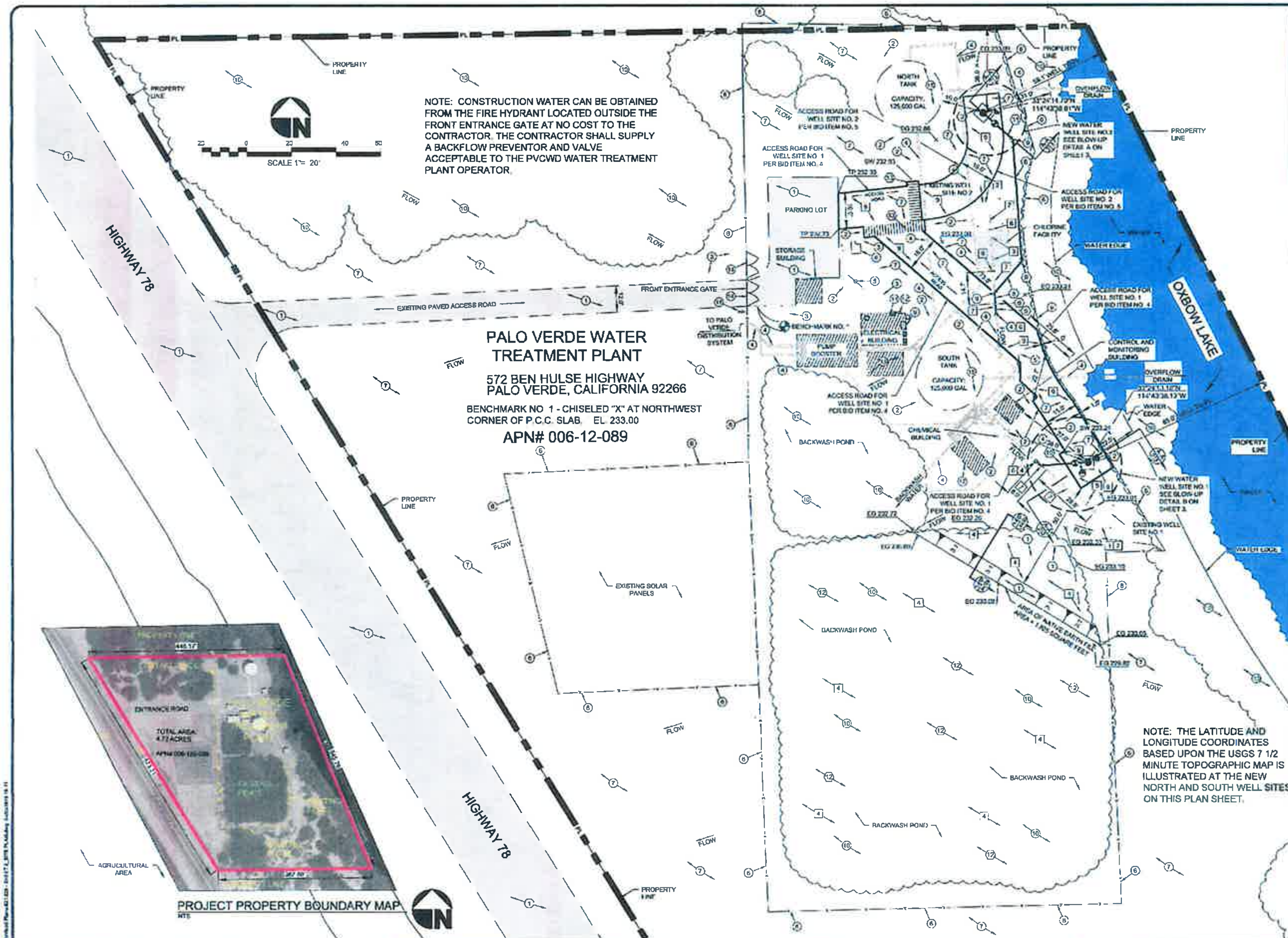
THENCE NORTH 89 DEGREES 54 MINUTES 07 SECONDS WEST, A DISTANCE OF 387.80 FEET TO A POINT ON SAID EASTERLY RIGHT-OF-WAY LINE OF CALIFORNIA STATE HIGHWAY 78;

THENCE NORTH 30 DEGREES 33 MINUTES 50 SECONDS WEST, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, A DISTANCE OF 573.21 FEET TO THE POINT OF BEGINNING.

CONTAINING 4.72 ACRES, MORE OR LESS

REGISTERED PROFESSIONAL ENGINEER
ROBERT K. HOLT
No. 27943
EXPIRES
03-31-02
CIVIL
STATE OF CALIFORNIA

Robert K. Holt
11/07/01



EXISTING KEYNOTES

1. EXISTING A.C. PAVEMENT TO REMAIN.
2. EXISTING P.C.C. SIDEWALK TO REMAIN
3. EXISTING P.C.C. SLAB TO REMAIN
4. EXISTING WATER PIPELINE TO REMAIN
5. EXISTING LIGHT POLE TO REMAIN
6. EXISTING 6' CHAINLINK FENCE WITH 3 STRAND BARBED WIRE TO REMAIN
7. EXISTING NATIVE SURFACE TO REMAIN
8. EXISTING POWER SERVICE TRANSFORMER TO REMAIN
9. EXISTING MCC PANEL TO REMAIN
10. EXISTING VEGETATION TO REMAIN
11. EXISTING ELECTRICAL PANEL "A" TO REMAIN
12. EXISTING MAIN POWER METER TO REMAIN
13. EXISTING GENERATOR WITH AWNING TO REMAIN
14. EXISTING 12 FOOT WIDE DOUBLE SWING CHAINLINK GATE TO REMAIN
15. EXISTING BOLTED STEEL TANK TO REMAIN
16. EXISTING FIRE HYDRANT TO REMAIN
17. EXISTING FILTER TO REMAIN

DEMOLITION KEYNOTES

1. REMOVE EXISTING WELL SITE WATER PUMP, PIPING, MOTOR AND OTHER EXISTING INFRASTRUCTURE. REMOVE THE PIPING WITHIN THE WATER WELL. THE EXISTING PUMP AND MOTOR SHALL REMAIN THE PROPERTY OF PVCWD. CONTRACTOR SHALL PLACE THE EXISTING PUMP AND MOTOR AT A LOCATION WITHIN THE WATER PLANT AREA DESIGNATED BY PVCWD. THE PIPING, P.C.C CONCRETE WELL CAP, SHADE STRUCTURE AND ALL OTHER ITEMS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.
2. CONTRACTOR SHALL BACKFILL THE EXISTING ABANDONED WATER WELL SHAFT. PRIOR TO BACKFILLING THE WATER WELL SHAFT REMOVE AND DISPOSE OF THE WATER WELL SHADE STRUCTURE. REMOVE AND DISPOSE OF THE P.C.C. SLAB SURROUNDING THE EXISTING WATER WELL. INSTALL 3/8 INCH DIAMETER OR SMALLER GRAVEL WITHIN THE EXISTING WELL CASING TO WITHIN 20 FEET OF GROUND LEVEL. GRAVEL SHALL BE DISINFECTED BY WASHING WITH 50 MG/L CHLORINE SOLUTION PRIOR TO INSTALLING IN WELL CASING AS RECOMMENDED BY AWWA A100-15 APPENDIX H. INSTALL SAND-CEMENT GROUT WITHIN THE EXISTING WELL CASING WITHIN THE REMAINDER OF THE EXISTING WELL TO WITHIN 5 FEET OF EXISTING GRADE. CUT AND REMOVE THE UPPER 5-FOOT OF THE EXISTING WELL CASING. WELD A FULL CIRCLE STEEL PLATE CAP ON EACH WELL. PLACE NATIVE MATERIAL IN THE AREA ABOVE THE REMOVED WELL CASING TO FINISH GRADE. COMPACT THE NATIVE MATERIAL IN MAXIMUM 1-FOOT LIFTS TO 85 PERCENT OF MAXIMUM DENSITY PER ASTM D 1557. THE CONTRACTOR SHALL PREPARE THE WELL ABANDONMENT COMPLETION REPORT AND FORWARD THE REPORTS TO THE IMPERIAL COUNTY HEALTH DEPARTMENT FOR REVIEW AND APPROVAL.
3. CONTRACTOR TO ABANDON THE EXISTING RAW WATER PIPELINE. FILL THE OPEN END OF THE PIPELINE WITH CEMENT-SAND GROUT FOR A DISTANCE OF 1-FOOT.
4. REMOVE BRUSH AND VEGETATION FROM BOTTOM AND EDGES OF THE BACKWASH POND TO OBTAIN BORROW MATERIAL FOR THE NATIVE EARTH FILLED AREA IN EXCESS OF THE MATERIAL OBTAINED FROM THE ACCESS ROADS, AS REQUIRED. REMOVE AND DISPOSE OF VEGETATION.
5. REMOVE AND DISPOSE OF THE EXISTING SIDEWALK AND UNDERLYING MATERIAL TO SUBBASE DESIGN GRADE UP TO THE EXISTING WELL SITE NO 1.
6. SAWCUT THE EXISTING 8-INCH DIAMETER PVC PIPELINE.
7. REMOVE AND DISPOSE OF EXISTING 8-INCH DIAMETER PVC PIPELINE.
8. SAWCUT THE EXISTING P.C.C. SIDEWALK FOR THE FULL DEPTH OF THE P.C.C. SIDEWALK.
9. REMOVE AND DISPOSE OF THE EXISTING NATIVE MATERIAL TO SUBBASE DESIGN GRADE.

CONSTRUCTION KEYNOTES

1. CONSTRUCT NATIVE EARTH CROSS-HATCHED FILLED AREA PER SECTION B-B ON SHEET 4 TO THE EXISTING ELEVATION OF THE AREAS TO THE NORTH AND EAST OF THE CONSTRUCTED EARTH FILLED AREA. INSTALL NATIVE EARTH MATERIAL IN MAXIMUM ONE (1) FOOT LIFTS. COMPACT THE NATIVE EARTH MATERIAL TO 85 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557.
2. CONTRACTOR TO INSTALL NEW WELL NO 1 PER TECHNICAL SPECIFICATIONS AND DETAIL B ON SHEET 3.
3. CONTRACTOR TO INSTALL NEW WELL NO 2 PER TECHNICAL SPECIFICATIONS AND DETAIL A ON SHEET 3.
4. INSTALL NEW 8-INCH DIAMETER DUCTILE IRON TRANSITION COUPLING. CONNECT TO EXISTING RAW WATER SUPPLY PIPELINE.
5. INSTALL NEW 8 INCH DIAMETER AWWA C 900 DR18 PVC RAW WATER SUPPLY PIPELINE PER TRENCH DETAIL D ON SHEET 4.
6. INSTALL NEW 8-INCH X 4-INCH DIAMETER REDUCER WITH RESTRAINED JOINT FITTING.
7. INSTALL 15 INCHES OF CLASS 2 BASE MATERIAL PER DETAIL C ON SHEET 4. COMPACT THE CLASS 2 BASE TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM-1557.
8. INSTALL NEW 4-INCH DIAMETER AWWA C-900 DR18 PVC RAW WATER SUPPLY PIPELINE PER TRENCH DETAIL D ON SHEET 4.
9. INSTALL NEW 4-INCH DIAMETER DUCTILE IRON 45-DEGREE ELBOW WITH RESTRAINED JOINT FITTINGS AND THRUST BLOCK.
10. INSTALL PIPING PER DETAIL B ON SHEET 3.
11. INSTALL PIPING PER DETAIL A ON SHEET 3.
12. REMOVE EXISTING NATIVE EARTH FROM THE BOTTOM OF THE BACKWASH POND, AS REQUIRED, IN EVEN 1-FOOT LIFTS AT THE SAME ELEVATION ACROSS THE BOTTOM OF THE POND TO PROVIDE THE BORROW MATERIAL TO CONSTRUCT THE NATIVE EARTH FILLED AREA.
13. PLACE 4-FOOT X 8-FOOT X 3/8 INCH STEEL PLATES OVER THE SIDEWALKS TO PROTECT THE SIDEWALKS FROM DAMAGE DURING THE CONSTRUCTION PERIOD.

LEGEND

ITEM NO	DESCRIPTION	SYMBOL
1	EXISTING P.C.C. SIDEWALK AND SLAB	
2	NEW CLASS 2 BASE ROADWAY	
3	CONSTRUCTED NATIVE FILLED AREA	
4	EXISTING BUILDINGS AND STRUCTURES	
5	NEW BUILDINGS OR STRUCTURES	
6	EXISTING A.C. PAVEMENT	
7	PLACE 4' X 8' X 3/8" STEEL PLATES OVER SIDEWALK AREAS	

1. Plan Revisions per Conditional Use Permit review and Holt Group Plan Modification Letter Dated 4/3/2019

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES D. "JACK" HOLT — 31773 — R.C.E. No

04/03/2019 — DATE — 12/31/20 — REG. EXP

04/03/2019

PROJECT TITLE:

PALO VERDE COUNTY WATER DISTRICT - WATER WELLS REPLACEMENT PROJECT

SITE PLAN

SHEET 2 OF 6

THG PROJECT NO. 871-078

April 3, 2019

Ms. Tabita Velarde
Community & Economic Development Coordinator
Imperial County Community & Economic Development Department
940 Main Street, Ste. 203
El Centro, California 92243

Re: Palo Verde County Water District – Water Wells Replacement Project
CDBG No. 16-CDBG-11151 – ICCED No. ICCED-011 - THG #821.028

Dear Ms. Velarde,

Please find below the list of questions and answers to the items being requested by the Imperial County Planning and Building Department per the email forwarded by Ms. Diana Robinson on April 2, 2019:

- Q: Size of Property (all dimensions)?
  A: The Property Boundary Map on Sheet 2 of the Improvement Plans illustrates the property dimensions.

- Q: Distance from wells to all property lines?
  A: The distances from the two (2) wells to the property lines are illustrated on Sheet 2 of the Improvement Plans.

- Q: Distance from wells to all septic/leach fields (if any)?
  A: There are no septic/leach fields within the property boundaries.

- Q: Distance from wells to all structures?
  A: The distances from the two (2) wells to the nearest structures are illustrated on Sheet 2 of the Improvement Plans.

- Q: All intermittent or perennial natural or artificial bodies of water or water sources and distance

  A: The Colorado River Oxbow Lake is illustrated on Sheet 2 of the Improvement Plans.

- Q: The approximate drainage pattern of the property?

  A: The drainage flow pattern is illustrated on Sheet 2 of the Improvement Plans with flow arrows.

- Q: Other structures surface or subsurface?

  A: The Water Treatment Plant structures and facilities are illustrated on Plan Sheet 2 of the Improvement Plans.

- Q: Location of Property?

  A: The official assigned address to the property is 572 Ben Hulse Highway, Palo Verde, CA 92260. The Water Treatment Plant is located 2 miles south of the town of Palo Verde along Highway 78 as referenced in the project description on Sheet 1 of the Improvement Plans. The property address is listed on Plan Sheet 2 of the Improvement Plans.

- Q: Assessor's Parcel Number?

  A: APN# 006-120-089-000. The Assessor's Parcel Number has been illustrated in Sheet 2 of the Improvement Plans.

- Q: The proposed minimum and proposed maximum depth of wells?

  A: 160 feet to 180 feet.

- Q: The proposed minimum depth and type of casings and maximum depths of perforation to be used?

  A: Well casing screen minimum depth will be 100 feet. The well casing screen or perforations shall extend 60 feet from 100 feet to 160 feet deep. Well screen perforations shall be continuous slot width openings of fifty thousands (0.050) of an inch.

- Q: Pump Type?
  A: Submersible Pump.

- Q: Size (Diameter/Horsepower)?
  A: 15 Horsepower.
- Q: GPM Capacity?
  A: 250 Gallons per minute.

- Q: Water Pressure?
  A: 18 PSI

Three (3) sets of the revised Plan Sheet 2 dated April 3, 2019 accompany this letter. Please contact me if questions arise or further clarification is needed.

Sincerely,

James G. "Jack" Holt, P.E.

Cc: Jade Padilla, Interim Community & Economic Development Manager

PALO VERDE COUNTY WATER DISTRICT

1065 Desert View-P.O. Box 185
Palo Verde, CA. 92266-0185

pvwaterworks@airwaveme.net
pvwaterworks@yahoo.com

Phone-760-854-3519
Fax-760-854-1149

March 20, 2019

Ms. Tabita Velarde
Community of Economic Development Manager
County Administration Center
940 W. Main Street, Suite 203
El Centro, CA. 92243

Dear Ms. Velarde:

As you know, Palo Verde County Water District (PVCWD) is currently upgrading the water treatment plant. This project began several years ago when our South Well suffered catastrophic failure. We have been in violation with the LPA since that time for having only one water source. Now our North Well has reached its life expectancy and could fail at any time. The motor control center (MCC) for the Well is obsolete and parts for the Well are no longer available. The motor itself has numerous running hours, and the condition of the pipe and casing is unknown, as is the condition of the filter screens below ground. Both of the Wells were put into use in the early 1980's, and with the failure of the South Well several years ago, we feel that the North Well is on borrowed time. Since parts for the Wells are no longer available, failure of any sort will shut us down and we will no longer be able to supply water to the town.

We would greatly appreciate it if you could expedite our Conditional Use Permit so we can replace these Wells as soon as possible. Failure of the system is not an option for PVCWD or our customers.

Thank you for your consideration on this matter.

Respectfully,

Kathi Frice Sanders

Kathi Frice-Sanders
Office Manager
Palo Verde County Water District

Palo Verde County Water District-Board of Directors

Ron Woods -Board President
Jess Predston-Vice President
Dave Khoury-Pro-Tem
Jan Ayala-Director

This institution is an equal opportunity provider and employer.

26. SPECIAL CONDITIONS

1. PROJECT DESCRIPTION

There are two (2) water wells at the Palo Verde Water Treatment Plant with a rated capacity of 250 gallons per minute. The North Well is located near the northeast corner of the Water Treatment Plant. The South Well is located near the southeast corner of the Water Treatment Plant. See plan sheet number 2 for the location of the existing and new water wells. The wells are located approximately 30 feet from the Ox Bow Lake channel. The Ox Bow Lake channel is supplied with water from the Colorado River. The existing north well is seventy (70) feet deep. The existing south well is ninety (90) feet deep. The static water level is approximately 7 feet deep. The two (2) existing water wells were installed in 1983 and are 35 years old. The existing south water well is no longer functional. The existing northerly water well is aged and may fail at any time. It is therefore important that the replacement of the two (2) existing wells occur as soon as possible.

The Palo Verde Water Treatment Plant is located 2 miles south of the town of Palo Verde along State Highway 78. The Palo Verde Water Treatment Plant and distribution system supplies water to approximately 124 single family residences, 7 commercial businesses, one multi-family property and the County Park located south of the Water Treatment Plant. The average domestic water demand (excluding fire flows) in the winter is 20,000 gallons per day. The average domestic water demand in the summer is 40,000 gallons per day. The estimated maximum day domestic water demand is 70,000 gallons per day.

The purpose of this project is to replace the two (2) existing water wells with two (2) new water wells. The installation of the new water wells and destruction of the existing water wells is to be completed in accordance with the State of California Department of Water Resources Bulletin 74-81 and 74-90, requirements of the County of Imperial Public Health Department and other

State of California Codes and requirements such as the California Safe Drinking Water Act - Health and Safety Code, California Code of Regulations, AWWA Standards and other applicable codes and regulations.

It will be necessary to maintain a water supply to the Palo Verde Water Treatment Plant during the Water Well Replacement Project construction period. The ***Sequence of Events*** for the installation of the new wells and destruction of the existing wells shall be accomplished in the following order:

1. Construct the class 2 base well access roads per demolition keynote 9 and construction keynote 7 as illustrated on plan sheet 2 prior to starting the destruction of the existing wells and construction of the new wells. Place steel plates over the pcc sidewalk areas along the access roads to prevent damage to the pcc sidewalks.

2. Construct the native earth berm south of the southerly well per demolition keynote 4 and construction keynote 1 as illustrated on plan sheet 2 prior to or during the destruction of the existing south well.

3. Complete the destruction of the south well. The destruction of the south well shall be accomplished in accordance with Demolition Keynotes 1 and 2 on plan sheet 2, the technical specifications and the prior referenced codes and standards.

4. After the destruction of the south well is completed and approved the installation of the new south well shall commence. The construction of the south well shall include the following:

    a. Drill the new well to a depth of 160 feet below existing grade per the technical conditions of the specifications. The well construction shall occur per the plans, specifications and applicable State of California, Imperial County Department of Public Health and AWWA Standards. The well construction includes the

installation of the electrical system for the well and the placement of the pcc slab centered at the top of the well casing.

b. Performance testing of the well shall be completed after it is constructed.

c. Disinfection of the water well is to be accomplished after the performance testing is satisfactorily accomplished.

d. Water Quality Testing shall be accomplished after the disinfection of the well is satisfactorily accomplished.

e. Construct piping downstream of the well according to the improvement plans after the performance testing, disinfection and water quality testing of the well have been accomplished. Pressure test and disinfect the piping in conformance with the plans and specifications. Install the flow metering system and associated electrical circuitry.

f. The water well, piping and all other items associated with the well shall be approved by the County of Imperial Public Health Department prior to placing the well in service.

5. After the construction of the southerly well has been approved by the County of Imperial Public Health Department and has been placed in service complete the destruction of the north well in accordance with Demolition Keynotes 1 and 2 on plan sheet 2, the technical specifications and the prior referenced codes and standards.

6. After the destruction of the north well is completed and approved the installation of the new north well shall commence. The construction of the north well shall include the following:

a. Drill the new well to a depth of 160 feet below existing grade per the technical conditions of the specifications. The well construction shall occur per the plans, specifications and applicable State of California, Imperial County Department of Public Health and AWWA Standards. The well construction includes the installation of the electrical system for the well and the placement of the pcc slab centered at the top of the well casing.

b. Performance testing of the well shall be completed after it is constructed.

c. Disinfection of the water well is to be accomplished after the performance testing is satisfactorily accomplished.

d. Water Quality Testing shall be accomplished after the disinfection of the well is satisfactorily accomplished.

e. Construct piping downstream of the well according to the improvement plans after the performance testing, disinfection and water quality testing of the well have been accomplished. Pressure test and disinfect the piping in conformance with the plans and specifications. Install the flow metering system and associated electrical circuitry.

f. The water well, piping and all other items associated with the well shall be approved by the County of Imperial Public Health Department prior to placing the well in service.

7. Complete the calibration and start-up of the magnetic flowmeter and associated flowmeter system. Complete the start-up of the flowmeter amplifier. Complete the circuitry connections and electrical instrumentation work for the compatible acceptance and integration of the amplifier output signal to the existing RTU Unit.

8. Place Shade Structures over new north and south wells.

2. IMPERIAL COUNTY PUBLIC HEALTH DEPARTMENT – The Palo Verde Water District Water Wells Replacement Project - Project Manual and Improvement Plans were reviewed by the County of Imperial Public Health Department, Division of Environmental Health during the project design phase. The County of Imperial Public Health Department, Division of Environmental Health will be monitoring the construction phase of the project. The County of Imperial Public Health Department will review the water well reports, water well decommissioning reports and conduct field observations at the construction site. All disinfection testing and water quality testing shall ultimately be approved by the Imperial County Public Health Department. The water wells shall not be allowed to be placed in service until approved by the County of Imperial Public Health Department. The County of Imperial Public Health Department contact information is as follows:

Imperial County Public Health Department
Division of Environmental Health
797 Main Street, Suite B
El Centro, California
92243

Contact: Jorge A. Perez, Environmental Health Services Manager

Phone: (442) 265-1888

3. GEOTECHNICAL TESTING

3.1 The following Geotechnical Testing shall be required for this project for Water Well Site Number 1:

3.1.1 A total of three (3) compaction tests shall be obtained on the Class 2 base Access Roadway. The location of the tests shall be determined by the Resident Engineer. The contractor shall install the access road in its entirety prior to scheduling the compaction testing.

3.1.2 Obtain two (2) tests for each 1 foot lift of native earth for the construction of the native earth fill area at the northeast corner of the south backwash pond. The location of the tests shall be determined by the Resident Engineer.

3.2 The following Geotechnical Testing shall be required for this project for Water Well Site Number 2:

3.2.1 A total of two (2) compaction tests shall be obtained on the Class 2 base Access Roadway. The location of the tests shall be determined by the Resident Engineer. The contractor shall install the access road in its entirety prior to scheduling the compaction testing.

4. SUBMITTALS

Submittal Information shall be submitted to the Engineer in electronic and hard copy form. The Contractor shall be required to forward the following submittal information to the Engineer within ten (10) calendar days after the issuance of the Notice to Proceed:

1. Construction Schedule
2. Letter Designating Project Superintendent
3. Contractor Identity Sign and State required Contractor's Employee Notices, Wage Guidelines and Poster Sign
4. Project Sign
5. Granular Sand Gradation
6. Class 2 Base Gradation
7. PCC Concrete – No Submittal Requirement however, a concrete vendor slip attesting the cement sack per yard shall accompany each concrete truck delivery to the site. The vendor slip shall be delivered to the Resident Engineer at the project site
8. Resilient Seated Gate Valve
9. Ductile Iron Pipe
10. Hardware for above and below grade piping
11. Ductile Iron Fittings
12. Flanged Coupling Adapters
13. Transition Couplings
14. Restrained Joint Fittings
15. Silent Check Valve

16. Well Service Air Release Valve, Shut off valve and drain valve
17. Pipe Support
18. AWWA C-900, DR 18 PVC raw water supply pipeline
19. Ductile Iron Blind Flange
20. Ductile Iron Reducer
21. Primer Coating
22. Intermediate Coating
23. Finish Coating
24. Magnetic flowmeter
25. Flow meter amplifier
26. Interconnecting Cable between flowmeter and flow meter amplifier

27. Per Magnetic Flow Meter Technical Specification 1.3.A, the following submittals shall be provided:

    1. Outline Dimensions, conduit entry locations and weight.
    2. Customer connection and power wiring diagrams – This is illustrated on the electrical plans. This submittal shall not be required
    3. Data sheets and catalog literature for microprocessor-based transmitter and transducer
    4. Interconnection drawings
    5. Installation and operations manual
    6. List of spare parts
    7. Complete technical product description including a complete list of options provided.
    8. Aluminum Shades for flow meters

28. Water Wells

    1. Description and Sequence of Events concerning Dual Rotary Process to be used for the new well installation
    2. 24 inch surface casing
    3. 12 inch diameter casing

4. PVC Drop Pipe
5. Cement Grout
6. Stainless steel wire wrapped screen
7. Glass bead filter pack
8. Stainless steel submersible pump and motor with built in check valve and Motor cooling flow inducing shroud
9. Water Well Report forms for new water well and existing water well Decommissioning
10. Gradation of gravel to be used for well abandonment
11. Electrical Pump Cord or Cables
12. Drilling Additives (if any). Drilling additives shall be NSF 60/61 approved.

29. Electrical

1. Electrical Conduit – Above grade and below grade
2. Pump Disconnect Switch
3. Above grade pump junction box
4. Traffic Rated Electrical Pull Box
5. Electrical Conductors
6. New Pump Starter Buckets including new starters, feeder breakers, elapsed time meters, HOA switches, run pilot lights, etc.
7. Labels for Switchboards, Panels, Main Service Disconnects, Disconnect Switches, etc.
8. Backing for mounting flowmeter amplifier
9. Electrical layout, circuitry and connects for connection of flowmeter amplifier to RTU unit

30. Shade Structure Shop Drawings and Structural Calculations

1. Shop Drawings including Design Loads, Structural Steel and Coating requirements, Fabric requirements, Aircraft Cable requirements and Steel Materials List
2. Shop Drawing Isometric View of Shade Structure
3. Shop Drawings Front, Side and Top Shade Structure Schematic Drawings

4. Shop Drawing Shade Structure Steel Member Connection Details

5. Shop Drawing Footing Pedestal Detail

6. Shade Structure Structural Calculations prepared by a California Licensed Civil or Structural Engineer

7. Color Samples for Structural Steel and Fabric to be forwarded during submittal review for color selection

5. MOBILIZATION FOR INSTALLATION OF WELL SITE NUMBER 1

Mobilization for Well Site Number 1 shall include the following items.

1. Delivery of Equipment, Materials and all other required items to the project site. Includes the removal of Equipment, Materials and all other items from the project site.

2. All required project signs including but not limited to the project sign, contractor's identity sign, Contractor Employee Notice and Wage Guideline Signs.

3. Restroom Facilities for construction personnel.

4. Insurance.

5. Bonds.

6. Taxes and Fees.

7. Delivery and Shipping Costs.

8. Providing a potable water facilities as specified. This includes a means by which all on site Contractor, Subcontractor and supplier personnel can wash their hands with soap. It also includes providing potable drinking water to the construction personnel at the project site.

9. Supplying an electrical power source to the project site.

10. Posting CAL/OSHA required notices.

11. Posting all DIR required notices and wage rates.

12. Maintaining a Contractors Superintendent at the project site on a full time basis.

13. Participating in pre-construction conference, project progress meetings, pre-final inspection meeting, final inspection meeting, and other project related meetings.

14. Locating and potholing underground utilities.

15. Preparing and processing all project submittal and shop drawing documents including the project construction schedule, contractor's price breakdown (Schedule of Values) and Submittal Schedule. Includes structural design calculations for shade structure.

16. Complying with the Air Pollution Control District Permit Requirements and paying all associated fees.

17. Well Permits. Includes the drilling of the new well number 1 and demolition of the existing well number 1. The Contractor shall include $6,500 for the well permits in the mobilization item of the bid form. If the well permit fee is greater than $6,500 then the contractor shall be compensated for the additional costs between the well permit fee and the $6,500 included in the mobilization item with a positive change order. If the well permit fee is less than $6,500 then the owner shall be compensated by the contractor for the difference between the $6,500 included in the mobilization item and the well permit fee with a negative change order.

18. All administrative fees including preparation of request for information forms, payment requests, change orders and similar items.

19. Project Cleanup.

20. Safety Requirements

21. Operation and Maintenance Manuals

22. As-Built Drawings

23. Shade Structure Permit for new well number 1 – The contractor shall include $3,000.00 for the shade structure permit for new well number 1 in the mobilization item of the bid form. If the shade structure permit is greater than $3,000.00, the contractor shall be compensated for the additional costs between the shade structure permit fee and the $3,000.00 included in the mobilization item with a positive change order. If the shade structure permit fee is less than $3,000.00 then the owner shall be compensated by the contractor for the difference between the $3,000.00 included in the mobilization item and the shade structure permit fee with a negative change order.

6. MOBILIZATION FOR INSTALLATION OF WELL SITE NUMBERS 1 AND 2

Mobilization for Well Site Number 1 and 2 shall include the following items.

1. Delivery of Equipment, Materials and all other required items to the project site. Includes the removal of Equipment, Materials and all other items from the project site.

2. All required project signs including but not limited to the project sign, contractor's identity sign, Contractor Employee Notice and Wage Guideline Signs.

3. Restroom Facilities for construction personnel.

4. Insurance.

5. Bonds.

6. Taxes and Fees.

7. Delivery and Shipping Costs.

8. Providing a potable water facilities as specified. This includes a means by which all on site Contractor, Subcontractor and supplier personnel can wash their hands with soap. It also includes providing potable drinking water to the construction personnel at the project site.

9. Supplying an electrical power source to the project site.

10. Posting CAL/OSHA required notices.

11. Posting all DIR required notices and wage rates.

12. Maintaining a Contractors Superintendent at the project site on a full time basis.

13. Participating in pre-construction conference, project progress meetings, pre-final inspection meeting, final inspection meeting, and other project related meetings.

14. Locating and potholing underground utilities.

15. Preparing and processing all project submittal and shop drawing documents including the project construction schedule, contractor's price breakdown (Schedule of Values) and Submittal Schedule. Includes structural design calculations for shade structure.

16. Complying with the Air Pollution Control District Permit Requirements and paying all associated fees.

17. Well Permits. Includes the drilling of the new wells and demolition of the existing wells. The Contractor shall include $8,500 for the well permits in the mobilization item of the bid form. If the well permit fee is greater than $8,500 then the contractor shall be compensated for the additional costs between the well permit fee and the $8,500 included in the mobilization item with a positive change order. If the well permit fee is less than $8,500 then the owner shall be compensated by the contractor for the difference between the $8,500 included in the mobilization item and the well permit fee with a negative change order.

18. All administrative fees including preparation of request for information forms, payment requests, change orders and similar items.

19. Project Cleanup.

20. Safety Requirements

21. Operation and Maintenance Manuals

22. As-Built Drawings

23. Shade Structure Permits – The contractor shall include $4,000.00 for the shade structure permit for new well number 1 in the mobilization item of the bid form. If the shade structure permit is greater than $4,000.00, the contractor shall be compensated for the additional costs between the shade structure permit fee and the $4,000.00 included in the mobilization item with a positive change order. If the shade structure permit fee is less than $4,000.00 then the owner shall be compensated by the contractor for the difference between the $4,000.00 included in the mobilization item and the shade structure permit fee with a negative change order.

Palo Verde County Water District Water Wells Replacement Project

Funding Source

The County of Imperial Community & Economic Development Department, on behalf of the Palo Verde County Water District, has acquired funds to implement the Palo Verde Water Wells Improvements Project. This project is being funded by the Housing and Community Development (HCD), through Community Development Block Grant Program (Grant #16-CDBG-11151).

Description of usage

Improvements to this facility will provide portable water to the community of Palo Verde. Currently, the district is in violation with the LPA as it is operating with only one well. This one well is subject to failure at any moment. Additionally, this well is not a considered a residential use well but rather is an agriculture well. The two new wells will be drilled and will be able to provide portable water to the community.

PALO VERDE COUNTY WATER DISTRICT (PVCWD) - WATER WELLS REPLACEMENT PROJECT

CDBG NO. 16-CDBG-11151

IMPERIAL COUNTY COMMUNITY AND ECONOMIC DEVELOPMENT AGENCY NO. ICCED-011

PROJECT DESCRIPTION

[illegible]

GENERAL NOTES

GENERAL NOTES

1. [illegible]
2. TRENCHING AND BACKFILL SHALL COMPLY WITH THE RECOMMENDATIONS OF THE PLANS
3. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS
4. ALL DRAWINGS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REVIEW AND COORDINATION OF ALL DRAWINGS AND SPECIFICATIONS PRIOR TO THE START OF CONSTRUCTION. ANY DISCREPANCIES THAT OCCUR SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO START OF CONSTRUCTION SO THAT A CLARIFICATION CAN BE ISSUED. ANY WORK PERFORMED IN CONFLICT WITH THE CONTRACT DOCUMENTS OR ANY CODE REQUIREMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND AT NO EXPENSE TO THE OWNER OR ENGINEER
5. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR OR LIABLE FOR [illegible] ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS
6. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
7. THE EXISTENCE, LOCATION AND CHARACTERISTICS OF UNDERGROUND UTILITY INFORMATION SHOWN ON THESE PLANS [illegible] ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. CONTRACTOR WILL VERIFY LOCATIONS
8. IF AT ANY TIME DURING EXCAVATION OPERATIONS ANY UNFAVORABLE GEOLOGICAL CONDITIONS ARE ENCOUNTERED, INCLUDING BUT NOT LIMITED TO THE UNCOVERING OF ARTICLES POTENTIALLY ARCHEOLOGICAL IN NATURE, EXCAVATION IN THAT AREA WILL STOP UNTIL APPROVED CORRECTIVE MEASURES ARE OBTAINED. CONTRACTOR WILL VERIFY LOCATIONS
9. ALL DEBRIS AND FOREIGN MATERIAL SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT APPROVED DISPOSAL SITES. THE CONTRACTOR SHALL OBTAIN NECESSARY PERMITS FOR THE TRANSPORTATION OF MATERIAL TO AND FROM THE SITE
10. [illegible]
11. THE CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
12. [illegible]
13. [illegible]
14. [illegible]
15. IF ANY UNFORESEEN SUB-SURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, THEY SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING FURTHER
16. UNSUITABLE MATERIAL THAT IS EXCAVATED BY THE [illegible] BE DISPOSED OF OFF SITE BY THE CONTRACTOR
17. CONTRACTOR SHALL REPLACE ANY SURFACE OR SUBSURFACE IMPROVEMENTS DAMAGED OR REMOVED DUE TO CONSTRUCTION AND IS REQUIRED TO REPLACE THEM TO THEIR ORIGINAL CONDITION.
18. [illegible]
19. [illegible] TO POURING ANY CONCRETE
20. CONTRACTOR IS RESPONSIBLE FOR EROSION, DUST, MUD, SILT, DEBRIS AND TEMPORARY DRAINAGE CONTROL DURING EXCAVATION OPERATIONS
21. THE TERM "INSPECTION" OR "INSPECT" AS USED IN THESE CONTRACT DOCUMENTS SHALL BE TAKEN TO MEAN "OBSERVE" OR "OBSERVATION". THE ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTOR'S CONSTRUCTION METHODS
22. SUBMIT SHOP DRAWINGS AND LAYOUT DRAWINGS FOR ALL MATERIALS PRIOR TO ANY MATERIAL PURCHASE OR INSTALLATION FOR REVIEW/APPROVAL BY THE ENGINEER
23. REMOVE INTERFERING PORTIONS OF EXISTING ABANDONED UTILITIES AS REQUIRED TO CONSTRUCT PROJECT. VERIFY ABANDONED STATUS PRIOR TO REMOVAL.
24. IN THE COURSE OF RUNOFF WATER CONTROL, THE CONTRACTOR SHALL PROTECT ALL WATER COURSES, THE GROUND WATER, BODIES OF WATER FROM POLLUTION BY FUEL, OILS, BITUMENS OR OTHER HARMFUL MATERIALS
25. HARD HAT AND HIGH VISIBILITY ORANGE VESTS SHALL BE WORN AT ALL TIMES WHEN WORKING ON THE PROJECT
26. CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT 48 HOURS PRIOR TO ANY EXCAVATION 1 800-227 2600
27. CONTRACTOR SHALL NOTIFY THE IMPERIAL COUNTY COMMUNITY AND ECONOMIC DEVELOPMENT AGENCY 48 HOURS PRIOR TO COMMENCEMENT OF WORK. TELEPHONE 442-265 1104
28. [illegible] AFFECTED CONSUMERS. THE CONTRACTOR SHALL NOTIFY THE DISTRICT CHIEF OPERATOR 48 HOURS PRIOR TO STARTING ANY WORK. THE CONNECTION TO EXISTING DISTRICT WATERLINE SHALL BE SUPERVISED BY THE DISTRICT CHIEF OPERATOR
29. ALL DRAINING OF EXISTING WATER MAINS AND DISPOSAL OF WATER AT TIE-INS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR
30. [illegible]
31. ALL SYSTEM PIPING SHALL BE HYDROSTATICALLY TESTED AT 150 PSI PRESSURE FOR 4 HOURS AS A MINIMUM AND PER AWWA STANDARDS, LATEST REVISION
32. PRIOR TO PLACING NEW/ALTERED WATER PIPELINE SECTIONS IN SERVICE, OR AFTER DEPRESSURIZING AN EXISTING WATER PIPELINE SECTION BELOW 5 PSI, A BACTERIA TEST IS TO BE COMPLETED AND THE RESULTS ARE TO BE REVIEWED BY THE LPA FOR APPROVAL. FOR MINOR PIPELINE WORK INVOLVING THE CUTTING INTO OR REMOVING OR REPAIRING EXISTING SMALL LENGTH PIPING, VALVES OR FITTINGS DISINFECTION MAY BE ALLOWED PER AWWA C651-14 WITHOUT THE NECESSITY OF COMPLETING BACTERIAL TESTING IF APPROVED BY THE LPA
33. THE CONTRACTOR SHALL FIELD VERIFY THE TYPE OF EXISTING JOINT AT ALL POINTS OF CONNECTION AND IS RESPONSIBLE FOR PROVIDING ALL FITTINGS WITH THE JOINTS REQUIRED TO MAKE CONNECTIONS TO EXISTING PIPELINES
34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL GEOTECHNICAL REPORTS TO THE COUNTY OF IMPERIAL FOR COMPACTION, CONCRETE STRENGTH, ETC

DEMOLITION NOTES

1. THE CONTRACTOR SHALL DEMOLISH AND REMOVE FROM THE SITE ALL EXISTING UTILITIES, STRUCTURES, AND ALL OTHER SITE FEATURES, UNLESS OTHERWISE NOTED ON THE PLAN
2. THE CONTRACTOR SHALL BE FAMILIAR WITH AND RESPONSIBLE FOR CLEARING THE SITE IN PREPARATION FOR CONSTRUCTION
3. [illegible]
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY AND ALL PERMITS AND SHALL PAY ALL FEES NECESSARY FOR GRADING AND DEMOLITION AS REQUIRED BY PRIVATE, LOCAL AND STATE JURISDICTIONS
5. [illegible]
6. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND
7. [illegible]
8. CONTRACTOR AND CONSTRUCTION MANAGER SHALL MAINTAIN RECORD DRAWINGS OF ALL UTILITIES ENCOUNTERED DURING DEMOLITION AND RECORD THE LOCATIONS OF ALL CAPPED UTILITIES FOR THE PREPARATION OF AS BUILT DRAWINGS
9. COORDINATE THE SALVAGE AND REMOVAL OF ITEMS/EQUIPMENT WITH THE DISTRICT
10. CONTRACTOR MUST OBTAIN A DUST PERMIT AND IMPLEMENT THE PROVISIONS OF THE DUST PERMIT DURING CONSTRUCTION

[illegible]

1. LOCATIONS AND DEPTHS OF UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND BASED ON AVAILABLE RECORD DRAWINGS. LOCATIONS, DEPTHS, DIAMETERS AND MATERIAL COMPOSITION OF EXISTING WATER PIPELINES ARE UNKNOWN. THE LOCATION OF ELECTRICAL CIRCUITRY IS UNKNOWN
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE MARK-OUT OF ALL UNDERGROUND FACILITIES PRIOR TO ANY EXCAVATION. THE CONTRACTOR SHALL POTHOLE AND EXPOSE ALL EXISTING UTILITIES, ELECTRICAL CIRCUITRY AND WATER PIPELINES ALONG THE LENGTH OF THE NEW ELECTRICAL CIRCUITS AND WATER PIPELINES PRIOR TO EXCAVATION OF THE NEW ELECTRICAL CIRCUITRY AND WATER PIPELINES. THE TRENCH SHALL BE EXCAVATED BY HAND WITH A SHOVEL OR WITH A BACKHOE. A TRENCHER SHALL NOT BE ALLOWED TO BE USED FOR ELECTRICAL CIRCUITRY OR WATER PIPELINE INSTALLATION.
3. NO LESS THAN 3 WORKING DAYS PRIOR TO ANY EXCAVATION OR TRENCHING, EACH CONTRACTOR DOING SUCH WORK SHALL CONTACT THE FOLLOWING AGENCIES SO THAT EXISTING UNDERGROUND UTILITIES MAY BE LOCATED. THE AGENCY MAY REQUIRE AN INSPECTOR TO BE PRESENT

1. PALO VERDE COUNTY WATER DISTRICT	(760) 854-3519
2. SOUTHERN CALIFORNIA EDISON	(760) 922-9158
3. VERIZON	(928) 880 2414

4. [illegible]
5. CONTRACTOR TO TAKE PRECAUTIONARY MEASURES TO PROTECT EXISTING WATER MAINS DURING PREPARATION OF SUBGRADE

CLEANUP

1. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL RUBBISH, WASTE MATERIALS, EXISTING PAVEMENT, CONCRETE DEBRIS AND ALL OTHER MATERIAL RESULTING FROM DEMOLITION ACTIVITIES. SURPLUS NATIVE MATERIAL SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR

SAFETY

1. THE CONTRACTOR SHALL COMPLY WITH SAFETY AND PROTECTION REQUIREMENTS NOTED IN THE GENERAL CONDITIONS, AND ALL PERTINENT PROVISIONS OF THE DEPARTMENT OF LABOR "SAFETY AND [illegible]" TITLE 29, PARTS 1910 AND 1926 (ALSO NOTED IN THE [illegible]) ONS OR MODIFICATIONS THERETO, IN EFFECT DURING [illegible]
2. ALL HEAVY CONSTRUCTION MACHINERY TO INCLUDE BULLDOZERS, BACKHOES, ETC. MUST BE EQUIPPED WITH A ROLL BAR MEETING THE REQUIREMENTS OF THE ABOVE REGULATION. SAFETY HELMETS SHALL BE WORN BY ALL PERSONNEL WO[illegible] SHALL BE REQUIRED TO WEAR [illegible] BOOTS, LONG SLEEVE SHIRTS [illegible] SITE.

INCIDENTAL ITEMS

1. ANY ITEM OF WORK CALLED OUT BY THE CONTRACT PLANS OR SPECIFICATIONS AND NOT SPECIFICALLY NOTED AS A BID ITEM ON THE PROPOSAL SHALL BE CONSIDERED INCIDENTAL TO ONE OF THE BID ITEMS ON THE PROPOSAL FORM

SHEET INDEX

ABBREVIATIONS

AGG	AGGREGATE	INV	[illegible]
APP.	APPROXIMATE	L	LENGTH
A.C.P.	[illegible]	LIP	LIP OF CURB IN DRIVEWAYS
A.C.	ASPHALT CONCRETE	L.P.A.	LOCAL PRIMACY AGENCY
AWWA	AMERICAN WATER WORKS ASSOCIATION	M.H.	MANHOLE
B.C.	BEGINNING OF CURVE RADIUS	MAX.	MAXIMUM
[illegible]	BUILDING	MIN	[illegible]
[illegible]	BUTTERFLY VALVE	MISC	MISCELLANEOUS
C.H.	[illegible]	N.T.S.	NOT TO SCALE
C.I.	[illegible]	O.C.	ON CENTER
C.B.	[illegible]	O.D.	[illegible]
C.M.C.	[illegible]	OHE	OVERHEAD ELECTRICAL LINE
C.M.L.	[illegible]	P.E.	[illegible]
℄	[illegible]	%	PERCENT
C & G	CURB AND GUTTER	P.I.G.	POINT OF INTERSECTING GRADES
DIA	[illegible]	P.I.T.	POINT OF INTERSECTING TANGENTS
DN	[illegible]	P.V.C.	POLY VINYL CHLORIDE
D/W	DRIVEWAY	PVCWD	[illegible]
Δ	[illegible]	P.C.C.	PORTLAND CONCRETE CEMENT
E.P.	EDGE OF PAVEMENT	P.P.	POWER POLE
EL	[illegible]	R	[illegible]
E.C.	END OF CURVE RADIUS	R.C.P.	REINFORCED CONCRETE PIPE
F.F.	FINISH FLOOR ELEVATION	R/W	RIGHT-OF-WAY
FL	[illegible]	S/W	[illegible]
F.S.	[illegible]	S	[illegible]
G.V.	[illegible]	SCH	SCHEDULE
H.B.	[illegible]	T	[illegible]
I.I.D.	[illegible]	T.C.	[illegible]
I.D.	[illegible]	TMH	TOP OF MANHOLE
		T.P.	TOP OF PAVEMENT

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF THE WORK OF THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION OF 6703 OF THE BUSINESS AND PROFESSIONS CODE AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS

I UNDERSTAND THAT THE CHECK OF THE PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF IMPERIAL IS CONFINED TO REVIEW ONLY AND DOES NOT RELIEVE ME AS ENGINEER OF WORK OF MY RESPONSIBILITY FOR PROJECT DESIGN

JAMES D. HOLT
THE HOLT GROUP INC
1601 N IMPERIAL AVENUE

JAMES D. HOLT
R.C.E. NO. 31772

DATE 7/6/2019

VICINITY MAP

Underground Service Alert

Call: TOLL FREE 811

TWO WORKING DAYS BEFORE DIGGING

COUNTY OF IMPERIAL PUBLIC HEALTH DEPARTMENT, DIVISION OF ENVIRONMENTAL HEALTH, LOCAL PRIMARY AGENCY (LPA)
APPROVED FOR CONSTRUCTION BY

PVCWD BOARD OF DIRECTORS

RON WOODS	PRESIDENT
JESS PRESTON	VICE-PRESIDENT
JAN AYALA	DIRECTOR
DAVID KHOURY	DIRECTOR

PVCWD STAFF

KATHI FRICE-SANDERS	OFFICE MANAGER
BARBARA HOPTON	ASSISTANT OFFICE MANAGER
STEVE FOLEY	LEAD OPERATOR
DARIN KANE	OPERATOR

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES D. "JACK" HOLT — 31772 R.C.E. NO.

07/06/2018 DATE — 12/31/18 REG. EXP.

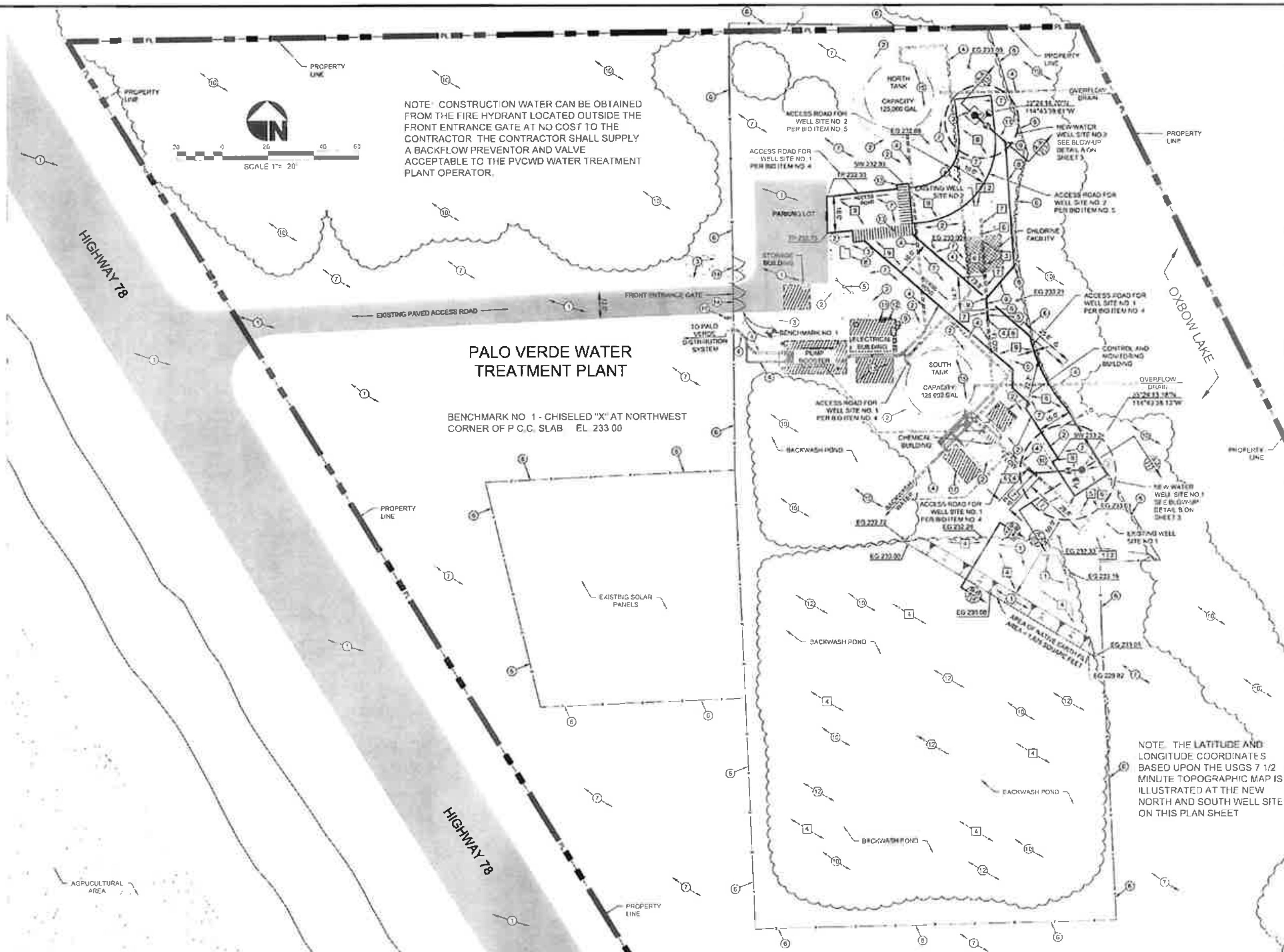
NOTE
THE BID FORM BASIS OF BID - SCHEDULE OF VALUES INCLUDES A BASE BID AND ALTERNATE 1 BID. THE BASE BID INCLUDES THE DEMOLITION AND INSTALLATION OF WATER WELL NUMBERS 1 AND 2 AND ALL OTHER ASSOCIATED ITEMS. THE ALTERNATE 1 BID INCLUDES THE INSTALLATION OF WELL NUMBER 1 AND ALL OTHER ASSOCIATED ITEMS. REVIEW THE BID FORM BASIS OF BID - SCHEDULE OF VALUES FOR THE COMPLETE IDENTIFICATION OF THE ITEMS COMPRISING THE BASE BID AND ALTERNATE NUMBER 1 BID

07/06/2018 — RSN — NTS — JGH

PALO VERDE COUNTY WATER DISTRICT
WATER WELLS REPLACEMENT PROJECT

TITLE SHEET

SHEET 1 OF 6



EXISTING KEYNOTES

1. EXISTING A.C. PAVEMENT TO REMAIN
2. EXISTING P.C.C. SIDEWALK TO REMAIN
3. EXISTING P.C.C. SLAB TO REMAIN
4. EXISTING WATER PIPELINE TO REMAIN
5. EXISTING LIGHT POLE TO REMAIN
6. EXISTING 6' CHAINLINK FENCE WITH 3 STRAND BARBED WIRE TO REMAIN
7. EXISTING NATIVE SURFACE TO REMAIN
8. EXISTING POWER SERVICE TRANSFORMER TO REMAIN
9. EXISTING MCC PANEL TO REMAIN
10. EXISTING VEGETATION TO REMAIN
11. EXISTING ELECTRICAL PANEL "A" TO REMAIN
12. EXISTING MAIN POWER METER TO REMAIN
13. EXISTING GENERATOR WITH AWNING TO REMAIN
14. EXISTING 12 FOOT WIDE DOUBLE SWING CHAINLINK GATE TO REMAIN
15. EXISTING BOLTED STEEL TANK TO REMAIN
16. EXISTING FIRE HYDRANT TO REMAIN
17. EXISTING [illegible] TO REMAIN

DEMOLITION KEYNOTES

1. REMOVE EXISTING WELL SITE WATER PUMP, PIPING, MOTOR AND OTHER EXISTING INFRASTRUCTURE. REMOVE THE PIPING WITHIN THE WATER WELL. THE EXISTING PUMP AND MOTOR SHALL REMAIN THE PROPERTY OF PVCWD. CONTRACTOR SHALL PLACE THE EXISTING PUMP AND MOTOR AT A LOCATION WITHIN THE WATER PLANT AREA DESIGNATED BY PVCWD. THE PIPING, P.C.C. CONCRETE, WELL CAP, SHADE STRUCTURE AND ALL OTHER ITEMS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR.
2. CONTRACTOR SHALL BACKFILL THE EXISTING ABANDONED WATER WELL SHAFT. PRIOR TO BACKFILLING THE WATER WELL SHAFT REMOVE AND DISPOSE OF THE WATER WELL SHADE STRUCTURE. REMOVE AND DISPOSE OF THE P.C.C. SLAB SURROUNDING THE EXISTING WATER WELL. INSTALL 3/8 INCH DIAMETER OR SMALLER GRAVEL WITHIN THE EXISTING WELL CASING TO WITHIN 20 FEET OF GROUND LEVEL. GRAVEL SHALL BE DISINFECTED BY WASHING WITH 50 MG/L CHLORINE SOLUTION PRIOR TO INSTALLING IN WELL CASING AS RECOMMENDED BY AWWA A100-15 APPENDIX H. INSTALL SAND-CEMENT GROUT WITHIN THE EXISTING WELL CASING WITHIN THE REMAINDER OF THE EXISTING WELL TO WITHIN 3 FEET OF EXISTING GRADE. CUT AND REMOVE THE UPPER 3 FOOT OF THE EXISTING WELL CASING. WELD A FULL CIRCLE STEEL PLATE CAP ON EACH WELL. PLACE NATIVE MATERIAL IN THE AREA ABOVE THE REMOVED WELL CASING TO FINISH GRADE. COMPACT THE NATIVE MATERIAL IN MAXIMUM 1 FOOT LIFTS TO 85 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557. THE CONTRACTOR SHALL PREPARE THE WELL ABANDONMENT COMPLETION REPORT AND FORWARD THE REPORTS TO THE IMPERIAL COUNTY HEALTH DEPARTMENT FOR REVIEW AND APPROVAL.
3. CONTRACTOR TO ABANDON THE EXISTING RAW WATER PIPELINE. FILL THE OPEN END OF THE PIPELINE WITH CEMENT SAND GROUT FOR A DISTANCE OF 1 FOOT.
4. REMOVE BRUSH AND VEGETATION FROM BOTTOM AND EDGES OF THE BACKWASH POND TO OBTAIN BORROW MATERIAL FOR THE NATIVE EARTH FILLED AREA IN EXCESS OF THE MATERIAL OBTAINED FROM THE ACCESS ROADS, AS REQUIRED. REMOVE AND DISPOSE OF VEGETATION.
5. REMOVE AND DISPOSE OF THE EXISTING SIDEWALK AND UNDERLYING MATERIAL TO SUBBASE DESIGN GRADE UP TO THE EXISTING WELL SITE NO. 1
6. SAWCUT THE EXISTING 8-INCH DIAMETER PVC PIPELINE
7. REMOVE AND DISPOSE OF EXISTING 8 INCH DIAMETER PVC PIPELINE
8. SAWCUT THE EXISTING P.C.C. SIDEWALK FOR THE FULL DEPTH OF THE P.C.C. SIDEWALK
9. REMOVE AND DISPOSE OF THE EXISTING NATIVE MATERIAL TO SUBBASE DESIGN GRADE

CONSTRUCTION KEYNOTES

1. CONSTRUCT NATIVE EARTH CROSS [illegible] FILLED AREA PER SECTION B-B ON SHEET 4 TO THE EXISTING ELEVATION OF THE AREAS TO THE NORTH AND EAST OF THE CONSTRUCTED EARTH FILLED AREA. INSTALL NATIVE EARTH MATERIAL IN MAXIMUM ONE (1) FOOT LIFTS. COMPACT THE NATIVE EARTH MATERIAL TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM D 1557
2. CONTRACTOR TO INSTALL NEW WELL NO 1 PER TECHNICAL SPECIFICATIONS AND DETAIL B ON SHEET 3
3. CONTRACTOR TO INSTALL NEW WELL NO 2 PER TECHNICAL SPECIFICATIONS AND DETAIL A ON SHEET 3
4. INSTALL NEW 8 INCH [illegible] DUCTILE IRON TRANSITION COUPLING. CONNECT TO EXISTING RAW WATER SUPPLY PIPELINE
5. INSTALL NEW 8-INCH DIAMETER AWWA C-900 DR 18 PVC RAW WATER SUPPLY PIPELINE PER TRENCH DETAIL D ON SHEET 4
6. INSTALL NEW 8 INCH X 4 INCH DIAMETER REDUCER WITH RESTRAINED JOINT FITTING
7. INSTALL 15 INCHES OF CLASS 2 BASE MATERIAL PER DETAIL L ON SHEET 4. COMPACT THE CLASS 2 BASE TO 95 PERCENT OF MAXIMUM DENSITY PER ASTM 1557
8. INSTALL NEW 4 INCH DIAMETER AWWA C-900 DR 18 PVC RAW WATER SUPPLY PIPELINE PER TRENCH DETAIL D ON SHEET 4
9. INSTALL NEW 4-INCH DIAMETER DUCTILE IRON 45-DEGREE ELBOW WITH RESTRAINED JOINT FITTINGS AND THRUST BLOCK
10. INSTALL PIPING PER DETAIL B ON SHEET 3
11. INSTALL PIPING PER DETAIL A ON SHEET 3
12. REMOVE EXISTING NATIVE EARTH FROM THE BOTTOM OF THE BACKWASH POND AS REQUIRED IN EVEN 1 FOOT LIFTS (AT THE SAME ELEVATION) ACROSS THE BOTTOM OF THE POND TO PROVIDE THE BORROW MATERIAL TO CONSTRUCT THE NATIVE EARTH FILLED AREA
13. PLACE 4 FOOT X 8 FOOT X 3/8-INCH STEEL PLATES OVER THE SIDEWALKS TO PROTECT THE SIDEWALKS FROM DAMAGE DURING THE CONSTRUCTION PERIOD

LEGEND

ITEM NO.	DESCRIPTION	SYMBOL
1	[illegible]	
2	[illegible]	
3	[illegible]	
4	[illegible]	
5	[illegible]	
6	[illegible]	
7	[illegible]	

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES [illegible] HOLT — 51773 — RCE No

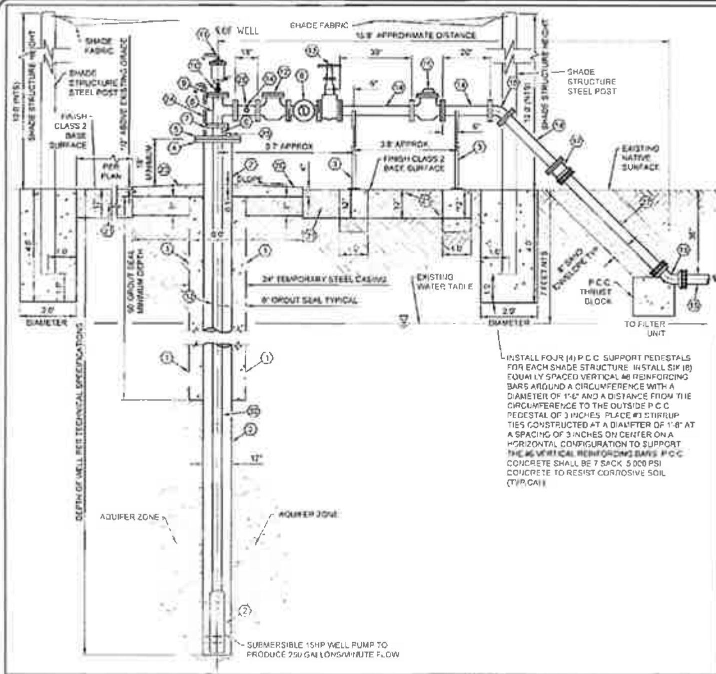
[illegible] DATE — 12/31/18 — REG. EXP.

07/30/2018 — IGH

PALO VERDE COUNTY WATER DISTRICT - WATER WELLS REPLACEMENT PROJECT

SITE PLAN

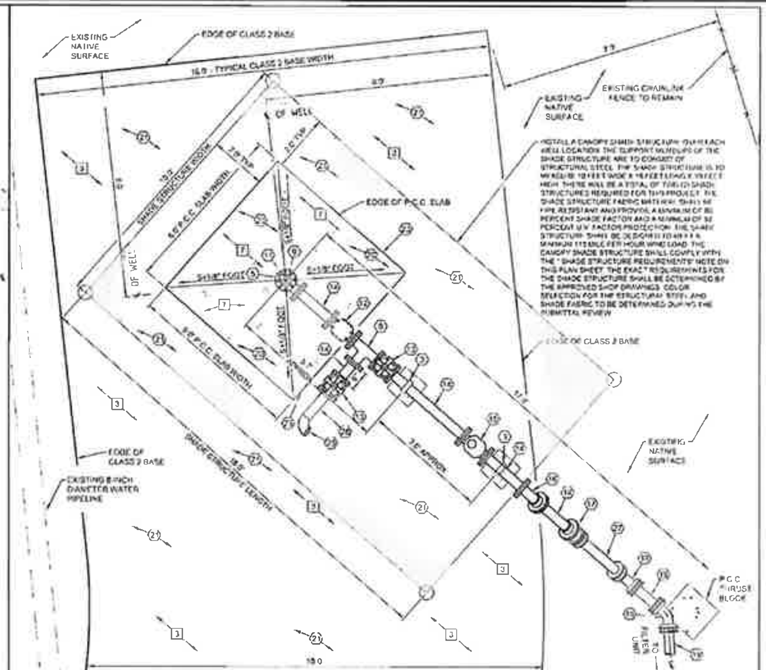
SHEET 2 OF 6



TYPICAL WATER WELL SECTION

NTS

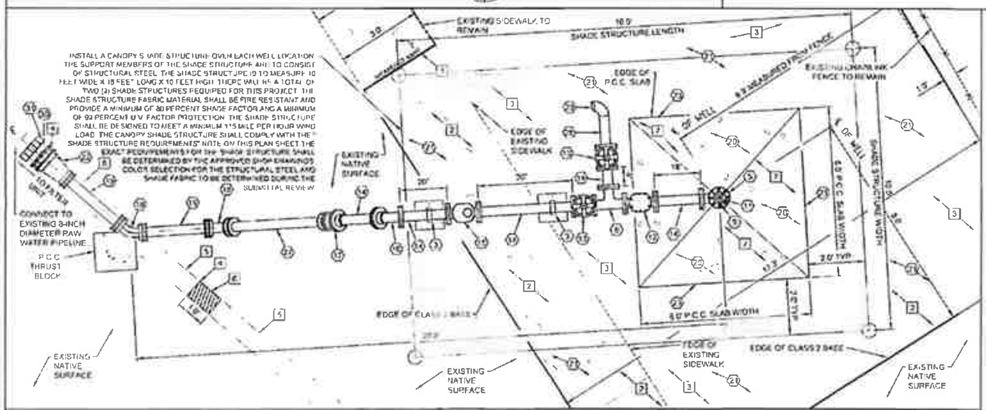
A-A 2|3



NEW WATER WELL NO.2 - BLOWUP DETAIL

NTS

A 2|3



NEW WATER WELL NO.1 - BLOWUP DETAIL

NTS

B 2|3

DEMOLITION KEYNOTES

[illegible]

CONSTRUCTION KEYNOTES

[illegible]

HYDROSTATIC PRESSURE TESTING NOTE

[illegible]

CONTACT COUNTY OF IMPERIAL HEALTH DEPARTMENT PRIOR TO POURING OF SANITARY SEAL NOTE

[illegible]

COATING SYSTEM FOR PIPING AND FITTINGS

[illegible]

SHADE STRUCTURE REQUIREMENTS

GENERAL NOTES

DESIGN LOADS

BUILDING CODE	CBC 2016 (BASED ON IBC 2015)
LIVE LOADS	5 PSF
SNOW LOAD	5 PSF
WIND LOADS	115 MPH
	3-Sec Gust, RISK CATEGORY II, EXPOSURE C

STRUCTURAL STEEL

1. ALL STRUCTURAL SHAPES SHALL BE COLD FORMED HSS ASTM A500 GRADE C, UNLESS OTHERWISE NOTED. TYPICAL MECHANICAL PROPERTIES FOR HSS PRODUCTS
   SQUARE AND RECTANGULAR 50,000 PSI YIELD/62,000 PSI TENSILE
   ROUND PIPE 46,000 PSI YIELD/62,000 PSI TENSILE
2. ALL GALVANIZED STEEL TUBE PRODUCTS ARE MANUFACTURED PER ASTM A500. TYPICAL MECHANICAL PROPERTIES ACHIEVED FOR GALVANIZED TUBE PRODUCTS
   ROUND TUBE 45,000 PSI YIELD / 48,000 PSI TENSILE
3. ALL PLATES SHALL COMPLY WITH ASTM A572 GRADE 50.
4. ALL STEEL TUBING SHALL BE TRIPLE COATED FOR RUST PROTECTION USING THE IN LINE ELECTROPLATING COAT PROCESS. TUBING SHALL BE INTERNALLY COATED WITH ZINC AND ORGANIC COATINGS TO PREVENT CORROSION AS MANUFACTURED BY ALLIED TUBE & CONDUIT.
5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS.
6. ALL SHOP WELDS SHALL BE EXECUTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY (AWS) D1.1 SPECIFICATIONS. ALL WELDS SHALL BE CONTINUOUS WHERE LENGTH IS NOT GIVEN, UNLESS OTHERWISE SHOWN OR NOTED ON DRAWINGS. ALL WELDS SHALL DEVELOP THE FULL STRENGTH OF THE WEAKER MEMBER. ALL WELDS SHALL BE MADE USING E70XX .045 WIRE.
7. SHOP CONNECTIONS SHALL BE WELDED UNLESS NOTED OTHERWISE. FIELD CONNECTIONS SHALL BE AS INDICATED ON THE DRAWINGS (IF REQUIRED). ALL FILLET WELDS SHALL BE A MINIMUM OF 3/16" UNLESS OTHERWISE NOTED. FIELD WELDS SHALL NOT BE ALLOWED.
8. ALL HIGH STRENGTH BOLTS SHALL COMPLY WITH ASTM A325 TYPE 1 OR A490 TYPE 1. ALL NUTS SHALL COMPLY WITH ASTM A563DH, AND WASHERS SHALL COMPLY WITH ASTM F436.

SHADE STRUCTURE REQUIREMENTS (CONTINUED)

9. [illegible]
10. ALL STAINLESS STEEL BOLTS / STUDS SHALL COMPLY WITH ASTM F593 ALLOY GROUP 1 OR 2. ALL NUTS SHALL COMPLY WITH ASTM F594 ALLOY GROUP 1 OR 2.
11. [illegible]

FABRIC SPECIFICATION

1. FABRIC SHALL BE A HIGH DENSITY POLYETHYLENE WITH ULTRAVIOLET ADDITIVES, WITH MONOFILAMENT AND TAPE CONSTRUCTION GIVING A STABLE MATERIAL AND RACHEL KNITTED TO ENSURE MATERIAL WILL NOT UNRAVEL IF CUT.
2. FABRIC SPECIFICATION

	SOLID COLORS	STRIPE COLORS
TEAR STRENGTH	WARP 220.4622 LB	WARP 182.0639 LB
	WEFT 483.0707 LB	WEFT 401.2413 LB
BURST STRENGTH	17.7098 PSI	33.0584 PSI
FADING	MINIMUM FADING AFTER 5 YEARS	
LIFE EXPECTANCY	A MINIMUM OF 8 YEARS CONTINUOUS EXPOSURE TO THE SUN	

3. [illegible]
4. THREAD - PTFE (TEFLON) USED [illegible] THE FOLLOWING SPECIFICATIONS: HIGH [illegible] LOW SHRINKAGE, WIDE TEMPERATURE RANGE, FLEX & ABRASION RESISTANT AND UV RADIATION IMMUNITY. LOCKSTITCH - 1200 DENIER, CHAINSTITCH THREAD - 2400 DENIER.

AIRCRAFT CABLE

1. WIRE ROPE CABLE SHALL BE 7 x 19 STRAND CORE GALVANIZED WIRE ROPE WITH A BREAKING STRENGTH VALUE OF 7,000 LBS (1/4" DIAMETER).
2. CABLES SHALL BE FED THROUGH THE FABRIC SLEEVES AROUND [illegible] CANOPY AND [illegible] FABRIC PANELS (DESIGNED PURPOSELY UNDERSIZED) REACH A TAUT APPEARANCE. ANY LONG TERM CABLE SAG SHALL BE MINIMIZED DURING THE MAINTENANCE RETIGHTENING VISITS AS REQUIRED.

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES G. "JACK" HOLT — 31773 R.C.E. No.

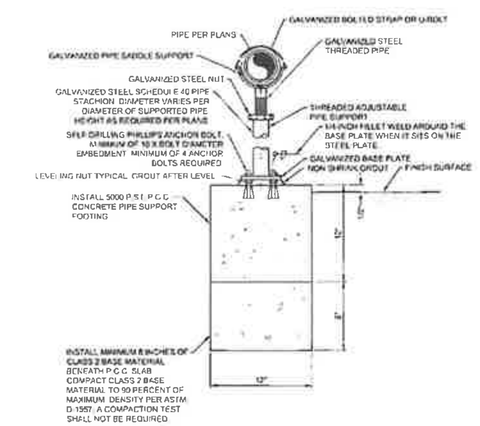
DATE — 12/31/18 REG. EXP.

PROJECT TITLE: PALO VERDE COUNTY WATER DISTRICT - WATER WELLS REPLACEMENT PROJECT

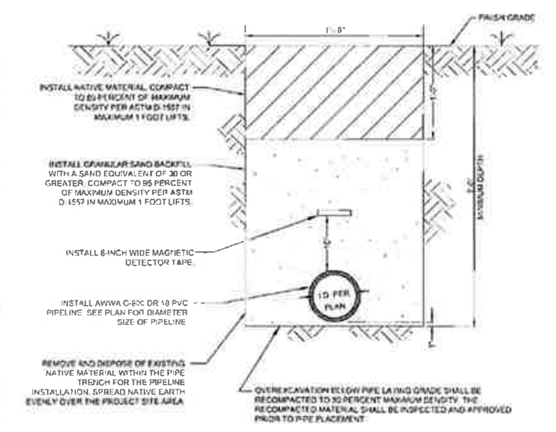
WATER WELL SECTIONS AND BLOWUP DETAILS

P3N

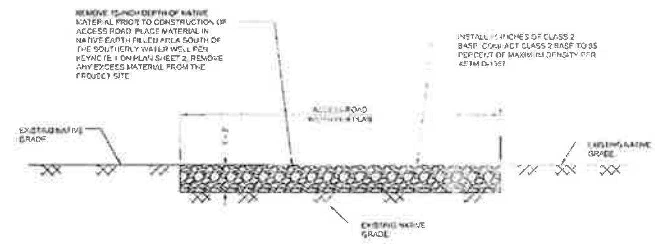
SHEET 3 OF 6



TYPICAL PIPE SUPPORT DETAIL
NTS
C 3|4



WATER PIPELINE TRENCH IN NATIVE AREAS DETAIL
NTS
D 3|4



CLASS 2 BASE ACCESS ROAD DETAIL
NTS
E 2|4

TECHNICAL SPECIFICATIONS – GROUT, SAND, CRUSHER FINES, CLASS 2 BASE, PCC CONCRETE

1. GROUT

GROUT SHALL CONSIST OF A SAND/CEMENT MIXTURE OF ASTM C150, TYPE 2 CEMENT, SAND AND WATER IN THE PROPORTION OF NOT MORE THAN 2 PARTS, BY WEIGHT, OF SAND TO 1 PART OF CEMENT WITH NOT MORE THAN 6 GALLONS OF WATER PER 94 POUND SACK OF CEMENT. GROUT SHALL BE PLACED IN SUCH A MANNER, FOR THE CONSISTENCY NECESSARY FOR EACH APPLICATION, SO AS TO ASSURE THAT THE SPACE TO BE GROUTED IS COMPLETELY FILLED.

2. SAND

CLEAN GRANULAR SAND FREE OF CLAY, SHALE AND DELETERIOUS MATERIAL SHALL BE DELIVERED TO THE SITE AND PLACED AS NOTED ON THE PLANS. SAND SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY AT OPTIMUM WATER CONTENT PER ASTM D-1557 UNLESS OTHERWISE NOTED ON THE PLANS. THE MATERIAL SHALL CONFORM TO A SAND EQUIVALENT OF 30 OR GREATER. THE MAXIMUM AMOUNT OF MATERIAL PASSING THE NUMBER 200 SIEVE SHALL BE 7 PERCENT. THE SAND SHALL CONFORM TO THE FOLLOWING GRADATION PERCENTAGES:

SIEVE SIZE	PERCENT PASSING
3/8"	100
NO. 4	95-90
NO. 8	90-75
NO. 10	75-60
NO. 16	60-50
NO. 30	50-28
NO. 40	38-23
NO. 50	28-18
NO. 100	10-7
NO. 200	7-0

THE GRADATION OF THE GRANULAR SAND SHALL BE FORWARDED TO THE ENGINEER AS A SUBMITTAL DOCUMENT. THE GRANULAR SAND MATERIAL SHALL NOT BE DELIVERED TO THE CONSTRUCTION SITE UNTIL THE ENGINEER HAS APPROVED THE SUBMITTAL. PRIOR TO THE PLACEMENT OF SAND, THE NATIVE SUBBASE GRADE SHALL BE CHECKED AND APPROVED BY THE ENGINEER.

CRUSHER FINES SHALL BE ALLOWED TO BE UTILIZED IN LIEU OF SAND IF APPROVED BY THE ENGINEER.

3. CRUSHER FINES

CRUSHER FINES SHALL CONSIST OF DECOMPOSED GRANITE. CRUSHER FINES UTILIZED FOR THIS PROJECT SHALL CONFORM TO THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE SIZE	PERCENT PASSING
3/8	100
NO. 4	80 – 100
NO. 8	50-[illegible]
NO. 30	[illegible]-55
NO. 200	[illegible]

THE SAND EQUIVALENT SHALL BE 25 OR GREATER.

THE GRADATION OF THE GRANULAR SAND SHALL BE FORWARDED TO THE ENGINEER AS A SUBMITTAL DOCUMENT. THE CRUSHER FINES SHALL NOT BE DELIVERED TO THE CONSTRUCTION SITE UNTIL THE ENGINEER HAS APPROVED THE SUBMITTAL.

4. CLASS 2 BASE

THE CLASS 2 BASE MATERIALS SHALL CONFORM TO CALTRANS SECTION 26, LATEST EDITION, FOR 25MM MAXIMUM BASE MATERIAL. THE GRADATION REQUIREMENTS ARE AS FOLLOWS:

SIZE	PERCENT PASSING
1 IN/25.01MM	100
3/4 IN/19.00MM	87-100
#4/4.75MM	30-65
#30/600MM	5-35
#200/75.00MM	0-12

THE SAND EQUIVALENT SHALL BE 25 OR GREATER. AN ANGULAR AGGREGATE IS TO BE USED. CLASS 2 BASE MATERIAL SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY ACCORDING TO ASTM D-1557 UNLESS OTHERWISE NOTED ON THE PLANS OR DETAILS. PRIOR TO THE PLACEMENT OF CLASS 2 BASE, THE NATIVE SUBBASE GRADE SHALL BE CHECKED AND APPROVED BY THE ENGINEER.

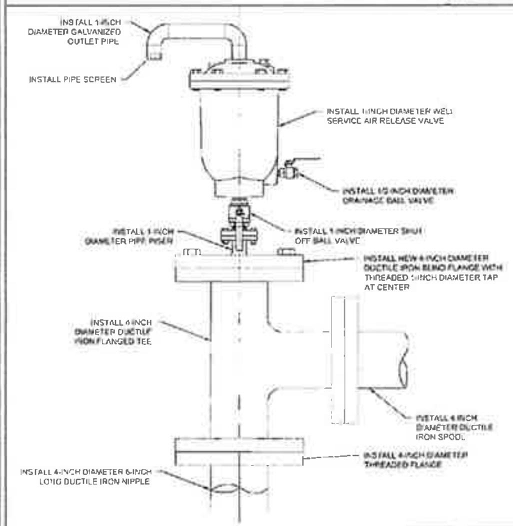
THE GRADATION OF THE CLASS 2 BASE SHALL BE DETERMINED AND THE TEST RESULTS FORWARDED TO THE ENGINEER FOR APPROVAL PRIOR TO THE DELIVERY OF THE CLASS 2 BASE MATERIALS TO THE PROJECT SITE. CLASS 2 BASE UTILIZING RECYCLED MATERIALS SHALL NOT BE ALLOWED.

5. P.C.C. CONCRETE

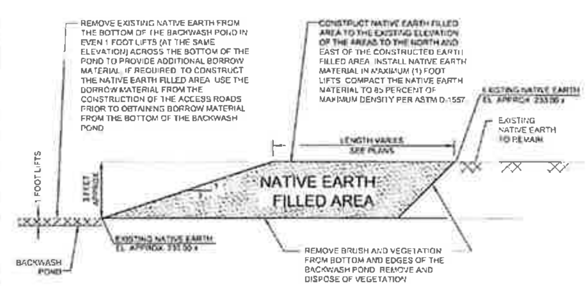
P.C.C. CONCRETE SHALL CONTAIN A MINIMUM OF 6 ½ SACKS OF CEMENT PER YARD AND ATTAIN 4,500 P.S.I. COMPRESSIVE STRENGTH AFTER 28 DAYS CURING UNLESS STATED OTHERWISE ON THE PLANS. A CONCRETE VENDOR SLIP FOR EACH TRUCK LOAD OF CONCRETE DELIVERED TO THE PROJECT SITE SHALL BE FORWARDED TO THE ENGINEER.

PRIOR TO THE PLACEMENT OF CONCRETE, THE SUBGRADE DEPTH SHALL BE INSPECTED TO INSURE THAT THE FULL DEPTH OF CONCRETE, AS NOTED ON THE PLANS, IS ATTAINED. EXCESS FILL MATERIAL SHALL BE REMOVED AS REQUIRED BY THE ENGINEER. THE FORM BOARDS SHALL BE CHECKED FOR THE PROPER ELEVATION. COMPACTION TESTS ON THE SUBGRADE SHALL HAVE ACHIEVED THE DENSITY REQUIREMENTS SPECIFIED. THE ENGINEER SHALL THEN ALLOW THE PLACEMENT OF CONCRETE.

THE CONCRETE SHALL BE SCREEDED AND FLOATED. ALL EDGES SHALL BE STRUCK WITH A CONCRETE EDGER. AFTER THE CONCRETE SURFACE HAS BEEN FLOATED AND CURED ADEQUATELY, IT SHALL RECEIVE A DOUBLE TROWEL FINISH. THE TROWELING SHALL BE ACCOMPLISHED BY HAND WITH A STEEL TROWEL. THE SURFACE OF THE CONCRETE SHALL RECEIVE A LIGHT BROOM FINISH AFTER THE SURFACE IS DOUBLE TROWELED. THE SURFACE OF THE CONCRETE SHALL BE SMOOTH AND TRUE TO GRADE. TOLERANCE FOR THE CONCRETE SURFACE SHALL BE 1/8 INCH IN 10 LINEAL FEET WITH MAXIMUM HIGH AND LOW VARIANCE NOT OCCURRING IN LESS THAN 20 FEET. THE CONTRACTOR SHALL MAINTAIN THE CONCRETE SURFACE MOIST OR WET FOR A 24 HOUR PERIOD AFTER THE CONCRETE IS PLACED AND FINISHED TROWELED. PLACEMENT OF BURLAP BAGS OR USED CARPET OVER THE CONCRETE SURFACE AND A CONTINUOUS APPLICATION OF WATER OVER THE CONCRETE SURFACE WILL BE REQUIRED FOR A 24 HOUR PERIOD. AFTER THE 24 HOUR PERIOD, A "SEAL HARD" CONCRETE SEALER AS MANUFACTURED BY L&M CONSTRUCTION CHEMICALS INC., SHALL BE APPLIED TO ALL NEW P.C.C. CONCRETE SURFACES. THE PHONE NUMBER OF L&M CONSTRUCTION CHEMICALS, INC. IS (402) 453-6600. THE CONCRETE SURFACES SHALL BE CLEANED OF ALL DIRT AND RESIDUE PRIOR TO THE PLACEMENT OF THE CONCRETE SEALER.



WELL SERVICE AIR RELEASE VALVE DETAIL
NTS
F 3|4



CONSTRUCT NATIVE EARTH POND SEPARATION AREA - SECTION B-B
NTS
B-B 3|4

PREPARED UNDER THE DIRECT SUPERVISION OF

JAMES G "JACK" HOLT — 31773 R.C.E. No.

08/06/2018 DATE — 12/31/18 REG. EXP.

PALO VERDE COUNTY WATER DISTRICT - WATER WELLS REPLACEMENT PROJECT

DETAILS AND CIVIL TECHNICAL SPECIFICATIONS

SHEET 4 OF 8

NOTES:

1. ALL ELECTRICAL WORK SHOWN IS NEW UNLESS OTHERWISE NOTED.
2. EXISTING ELECTRICAL NOT INDICATED TO BE REMOVED OR REPLACED SHALL BE PROTECTED DURING CONSTRUCTION & LEFT IN PLACE. CLEAN/REPAIR/RESTORE THIS EXISTING ELECTRICAL TO SERVICEABLE CONDITION PRIOR TO COMPLETION OF WORK.
3. INSPECT, CLEAN, & REPAIR ALL EQUIPMENT TO BE REUSED.
4. THE ELECTRICAL CONTRACTOR SHALL COORDINATE, BID, AND PROVIDE ALL INCIDENTAL ELECTRICAL DEMOLITION WORK, TEMPORARY ELECTRICAL REMOVAL & REINSTALLATION WORK, & RESTORATION OF EXISTING ELECTRICAL WORK TO EXISTING CONDITION OR BETTER AT ANY CIVIL OR MECHANICAL DEMOLITION OR REMOVALS IDENTIFIED ON THE CIVIL OR MECHANICAL PLANES. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE CIVIL & MECHANICAL PLANS & COORDINATING WORK RESPONSIBILITY WITH THE GENERAL CONTRACTOR & INCLUDING ALL SUCH WORK IN THE CONTRACT BID.

KEY NOTES:

(1) SEE ELECTRICAL ONE-LINE DIAGRAM.

(2) AFTER WELL DECTIVATION & REMOVAL FROM SERVICE PER CIVIL PLANS, REMOVE & DISPOSE EXISTING WELL PUMP ELECTRICAL, INCLUDING DISCONNECT SWITCH, 120V SERVICE RECEPTACLE, WIRING, CONDUIT, & ALL ASSOCIATED ACCESSORIES. REMOVE WIRING COMPLETELY BACK TO THE MCC. CAP & ABANDON UNDERGROUND CONDUIT IN PLACE.

(3) 90° J-BOX & CONNECTION FOR MAG METER. INSTALL PER MANUFACTURER & SUPPLIER REQUIREMENTS.

(4) (1) 2" CONDUIT (WELL PUMP MOTOR CIRCUITS).
(1) 2" CONDUIT (CONTROL/SIGNAL).
(1) 2" CONDUIT (SPARE W/PULLSTRING).
SEE ELECTRICAL ONE-LINE DIAGRAM.

(5) (1) 1" CONDUIT (WELL PUMP MOTOR CIRCUIT).
SEE ELECTRICAL ONE-LINE DIAGRAM.

(6) (1) 1" CONDUIT (CONTROL/SIGNAL CONDUCTORS). CABLING SHALL BE PROVIDED BY THE MANUFACTURER & SUPPLIER. INSTALL CABLING AS REQUIRED BY SUPPLIER.

(7) (2) WELL FLOW METER MONITOR/TRANSMITTERS WITH TOTALIZER INDICATORS (1 FOR EACH WELL). COORDINATE INSTALLATION WITH OWNER & CIVIL ENGINEER TO FIT IN THE AVAILABLE SPACE. CONNECT EACH MAG FLOW METER OUTPUT SIGNAL TO THE FLOW METER REMOTE MONITOR/TRANSMITTER. CONNECT EACH MONITOR/TRANSMITTER OUTPUT SIGNAL TO THE EXISTING RTU UNIT. AN ANALOG OUTPUT SHALL BE PROVIDED FOR THE FLOW INDICATOR. A PULSE OUTPUT SHALL BE PROVIDED FOR THE FLOW TOTALIZER. DESIGN, LAYOUT, WIRING, CONNECTIONS, RTU INTERFACE, & PROGRAMMING TO BE PROVIDED BY THE CONTRACTOR'S FLOW METER SUPPLIER. FLOW METER SUPPLIER SHALL COORDINATE WITH MANUFACTURER/SUPPLIER OF RTU UNIT.

(8) (1) 2" CONDUIT (CONTROL/SIGNAL CONDUCTORS). CABLING SHALL BE PROVIDED BY THE MANUFACTURER & SUPPLIER. INSTALL CABLING AS REQUIRED BY SUPPLIER.

(9) VERIFY, INSPECT, CLEAN, REPAIR, & RECONNECT EXISTING WELL PUMP CONTROLS. REFURBISH OR REPLACE ANY DAMAGED OR INOPERATIVE FLOAT SWITCHES, SELECTOR SWITCHES, RELAYS, TIMERS, WIRING, OR COMPONENTS AS REQUIRED. TANK SELECTION BETWEEN "OFF" AND THE NORTH & SOUTH TANKS AND WELL PUMP START/STOP INITIATED BY THE TANK LEVEL CONTROLS IS ACCOMPLISHED AT THE EXISTING WARRICK RESERVOIR PANEL AT THE ELECTRICAL BUILDING. THE TOMKA FILTER CONTROL PANEL AT THE CONTROL BUILDING USES INPUTS FROM THE TANK FLOATS AND PUMP START CIRCUIT AT THE WARRICK RESERVOIR PANEL TO INITIATE THE FILTER CYCLE. THE TOMKA FILTER CONTROL PANEL ALSO OUTPUTS 2 WELL PUMP INTERRUPT CIRCUITS BACK TO THE WARRICK RESERVOIR PANEL WHEN BACKWASH IS INITIATED.

(10) CONNECT NEW WELL PUMP MOTOR CIRCUITS. LABEL PER NEC & SPECIFICATIONS.

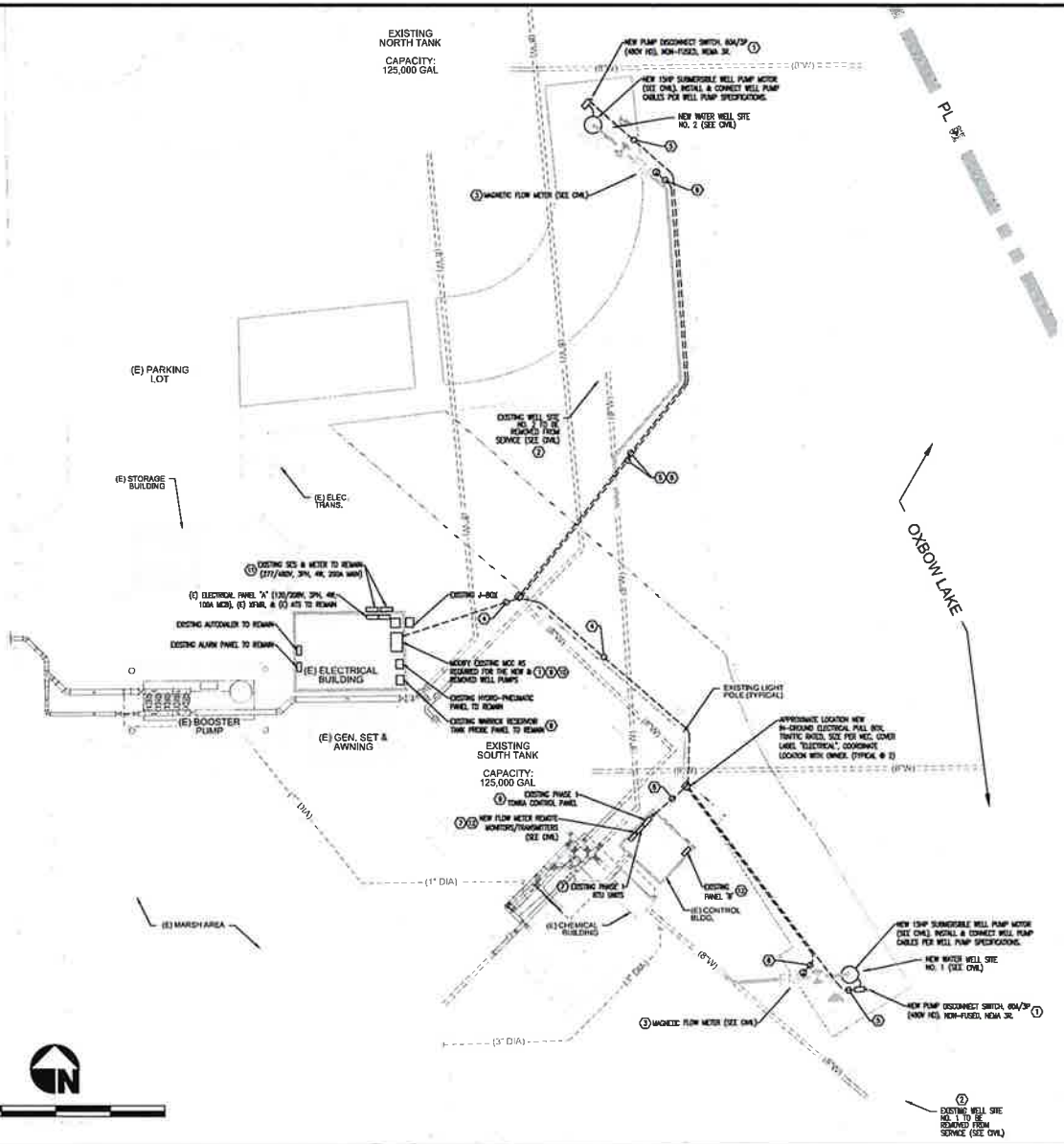
(11) EXISTING SCES, ATS, GENERATOR, & ELECTRICAL DISTRIBUTION TO REMAIN. THE NEW WELL PUMPS & ASSOCIATED WORK WILL BE REPLACING EXISTING WELL PUMPS & ASSOCIATED WORK AND WILL NOT CHANGE THE EXISTING ELECTRICAL DEMAND AT THE SCES. AT START OF CONSTRUCTION, COORDINATE WITH OWNER AND SOUTHERN CALIFORNIA EDISON TO OBTAIN PEAK KW DEMAND FOR THE PREVIOUS 12 MONTHS. SUBMIT PEAK KW DEMAND DATA TO THE ENGINEER FOR FINAL ANALYSIS OF THE EXISTING ELECTRICAL DEMAND.

(12) COORDINATE WITH FLOW METER MONITOR/TRANSMITTER SUPPLIER & INSTALL 120V POWER SUPPLY AS NEEDED. INSTALL NEW 15A CIRCUIT BREAKER AT PANEL & INSTALL NEW BRANCH CIRCUIT IN CONDUIT FROM PANEL TO EQUIPMENT. LABEL AT PANEL PER NEC. (AS AN OPTIONAL ALTERNATIVE, CONTRACTOR & SUPPLIER MAY CONNECT TO AN EXISTING CONTROL/MONITOR EQUIPMENT BRANCH IF DETERMINED TO BE SUITABLE & ACCEPTABLE FOR ALL NEW & EXISTING CONNECTED EQUIPMENT.) SEE PHASE 1 CHLORINATION SYSTEM AND CONTROL REPLACEMENT PROJECT FOR EXISTING PANEL "B" INFORMATION & LOADS. NEW FLOW METER EQUIPMENT WILL ADD 32VA (0.43A @ 120V) TO THE EXISTING PANEL.

ELECTRICAL SYMBOLS & ABBREVIATIONS:

- DUPLEX RECEPTACLE, 120V/20A, MOUNT 12" A.F.F. UNLESS NOTED OTHERWISE.
- JUNCTION BOX, MOUNT AS SHOWN.
- NUMBER OF WIRES IN CONDUIT, LONG SLASH DENOTES GROUND WIRE, SHORT SLASH DENOTES NUMBER OF CURRENT CARRYING CONDUCTORS & NEUTRALS, HALF SLASH DENOTES SWITCHED LEG.
- LIGHT CIRCUIT SWITCH, 120V/20A, MOUNT 48" A.F.F. UNLESS NOTED OTHERWISE.
- FUSED OR NONFUSED DISCONNECT SAFETY SWITCH, SIZE & TYPE AS SHOWN.
- MEMA MOTOR STARTER, SIZE AS SHOWN.
- UNDERGROUND CONDUIT.
- ABOVE GROUND CONCEALED CONDUIT.

ATS AUTOMATIC TRANSFER SWITCH.
CWP COLD WATER PIPE.
(E) EXISTING EQUIPMENT.
FVNR FULL VOLTAGE, NON-REVERSING.
GFI GROUND FAULT CIRCUIT INTERRUPTER.
HD HEAVY DUTY.
MCC MOTOR CONTROL CENTER.
SES SERVICE ENTRANCE SECTION, SIZED AS SHOWN.
XFMR TRANSFORMER.
WP OUTDOOR WEATHERPROOF ENCLOSURE.
WP-NEMA OUTDOOR WEATHERPROOF "IN-USE" ENCLOSURE.



DIGALERT 811

JOL ENTERPRISES, INC
JOB No.: 18-017

PREPARED UNDER THE DIRECT SUPERVISION OF:
JAMES R. ADLER
E 15119
R E No
05-09-2018
DATE
12/31/19
REG EXP

05-09-18
STAFF
AS SHOWN
J.N.A.

PROJECT TITLE
PALO VERDE COUNTY WATER DISTRICT
WATER WELLS REPLACEMENT PROJECT

ELECTRICAL SITE PLAN

THIS PROJECT NO. 82.1.218

SHEET 5 OF 6

ELECTRICAL GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP TO BE NEW AND OF FIRST RATE QUALITY. MATERIALS TO BE UL LISTED AND APPROVED. ALL MATERIALS AND EQUIPMENT SHALL BE INSTALLED IN COMPLIANCE WITH THE CURRENT ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE AND ANY OTHER STATE AND LOCAL APPLICABLE CODES.

2. ALL CEILING, FLOOR, AND WALL PENETRATIONS AND BOXES SHALL BE CAULKED/SEALED TO PRESERVE FIRE RATINGS AND WATER PROOF INTEGRITY. FIRESTOPPING OF PENETRATIONS IN AND THROUGH FIRE RATED FLOORS, CEILINGS & WALLS SHALL BE IN ACCORDANCE WITH IBC & UL AND AS REQUIRED BY THE FIRESTOPPING MANUFACTURER FOR THE CONSTRUCTION TYPE & FIRE RATING SPECIFIED (SEE ARCHITECTURAL DRAWINGS). THE FIRESTOPPING SYSTEM SHALL BE LISTED AND TESTED TO UL-1479 & ASTM E-814. INSTALL IN STRICT COMPLIANCE WITH THE MANUFACTURER INSTRUCTIONS.

3. ALL ELECTRICAL CONDUCTORS SHALL BE COPPER, 90 DEGREE C TEMPERATURE RATING, MINIMUM SIZE IS NO. 12 AWG. ALL WIRING SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED ON THE DRAWINGS. UNDERGROUND CONDUCTORS MUST BE RATED FOR 90 DEGREE C AS DEFINED FOR "WET LOCATION" BY THE NEC UNLESS NOTED OTHERWISE.

4.A. ALL CONDUIT SHALL BE METALLIC ELECTRICAL CONDUIT UNLESS NOTED OTHERWISE ON THE DRAWINGS. MINIMUM SIZE CONDUIT IS 1/2". ALL CONDUITS AND BOXES SHALL BE CONCEALED ABOVE CEILINGS, IN WALLS OR UNDER FLOORS AS REQUIRED OR AS NOTED OTHERWISE ON THE DRAWINGS.

B. UNDERGROUND CONDUIT SHALL BE MINIMUM OF SCHEDULE 40 PVC, 90 DEGREE C. RATED WITH MINIMUM OF TRENCH COVER PER NEC TABLE 300-5. ALL UNDERGROUND JUNCTION/PULL BOXES SHALL BE RATED THE SAME AS THE ASSOCIATED CONDUIT, MINIMUM SIZE UNDERGROUND CONDUIT IS 3/4".

5. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF CONDUIT, WIRING, ELECTRICAL EQUIPMENT AND ASSOCIATED HARDWARE WITH THE INSTALLATION OF THE MECHANICAL EQUIPMENT AND OTHER TRADES. SEE THE CIVIL PLANS FOR EXACT LOCATIONS.

6. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION AND INSTALLATION OF SERVING ELECTRICAL TELEPHONE/TV COMPANY CONDUIT SYSTEMS AND SERVICE EQUIPMENT. UNDERGROUND TRENCH LOCATIONS SHOWN ARE APPROXIMATE AND MUST BE VERIFIED BY THE SERVING UTILITY. CONTACT WITH THE SERVING UTILITIES IS REQUIRED PRIOR TO INSTALLATION. THE CONTRACTOR IS RESPONSIBLE FOR EXISTING FIELD CONDITIONS AND PROVIDING A FULL FUNCTIONING ELECTRICAL SYSTEM.

7. ALL LIGHT FIXTURES, RECEPTACLE AND JUNCTION BOXES, PANEL BOARDS AND ALL OTHER METALLIC ELECTRICAL APPLIANCES AND DEVICES MUST BE GROUNDED AS REQUIRED BY SECTION 250 OF THE NATIONAL ELECTRICAL CODE.

8. ASBESTOS CONTAINING MATERIALS MAY BE PRESENT IN THE EXISTING STRUCTURES ON THIS PROJECT. THE CONTRACTOR SHALL TAKE APPROPRIATE SAFETY PRECAUTIONS IN ACCORDANCE WITH OSHA AND EPA REGULATIONS DURING INSTALLATION OF ELECTRICAL EQUIPMENT AND, OR REMOVAL OF EXISTING BUILDING MATERIALS WHICH MAY CONTAIN ASBESTOS. CONTRACTOR SHALL IMMEDIATELY CEASE WORK AND NOTIFY THE OWNER OF ANY MATERIALS BELIEVED TO CONTAIN ASBESTOS. WORK SHALL PROCEED ONLY UPON DIRECTION FROM THE OWNER.

ELECTRICAL SPECIFICATIONS:

FURNISH AND INSTALL, INCLUDING LABOR, SUPERVISION, MATERIALS, TOOLS, SERVICES, TRANSPORTATION, OVERHEAD COSTS, FEES, PLAN CHECK FEES, INSPECTION CHARGES, ROYALTIES, PROFITS, ETC., A COMPLETE ELECTRICAL INSTALLATION AS SPECIFIED HEREIN AND INDICATED ON THE ELECTRICAL DRAWINGS. PERFORM WORK IN AN APPROVED, NEAT, FIRST CLASS, SAFE, WORKMANSHIP LIKE MANNER THAT COMPLIES WITH ALL APPLICABLE LOCAL, STATE, FEDERAL, AND SERVICING ELECTRICAL AND TELEPHONE UTILITIES, ETC., CODES, ORDINANCES, RULES, REGULATIONS, STANDARDS, ETC. THE ENTIRE ELECTRICAL INSTALLATION SHALL COMPLY WITH OR SURPASS THE MOST RECENT EDITION OF THE NATIONAL ELECTRICAL CODE AND OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA).

ALL MATERIALS AND EQUIPMENT FURNISHED BY THE ELECTRICAL CONTRACTOR SHALL BE NEW OF FIRST-CLASS QUALITY UNLESS NOTED OTHERWISE, FREE FROM DEFECTS, AND CONFORM WITH UNDERWRITER LABORATORIES INC. STANDARDS AND BE SO LABELED. MATERIALS, EQUIPMENT ETC. NOT INDICATED ON DRAWINGS OR SPECIFIED HEREIN BUT REQUIRED FOR A SUCCESSFUL AND EFFICIENT COMPLETION OF THE ELECTRICAL INSTALLATION SHALL BE HELD TO BE IMPLIED AND SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST. ENCLOSURES FOR ALL EQUIPMENT SHALL BE SUITABLE FOR USE INTENDED e.g., WEATHER-PROOF FOR EXTERIOR AND WET LOCATIONS. ALL EQUIPMENT SHALL BE RATED FOR USE INTENDED, e.g., VOLTAGE, HORSE POWER RATING OF DISCONNECT SWITCHES, ETC.

MATERIALS, EQUIPMENT, ETC., INCLUDING THOSE FURNISHED BY OTHERS, THAT ARE TO BE INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE RECEIVED AND PROPERLY PROTECTED BY THE CONTRACTOR UNTIL ENTIRE INSTALLATION IS COMPLETE.

MAKE NO INSTALLATION OF WORK WHICH WOULD LEAVE INADEQUATE OPERATION OR SERVICING SPACE FOR ANY ITEM FOR THE ENTIRE PROJECT. DRAWINGS ARE NOT INTENDED TO SHOW IN DETAIL ALL FEATURES OF WORK. CHECK LOCATION AT ELECTRICAL WORK TO DETERMINE IN ADVANCE THAT IT CLEARS ALL OPENINGS, STRUCTURAL MEMBERS, ETC. THE CONTRACTOR SHALL INSTALL ALL THE MINIMUM CODE REQUIRED MATERIALS AND EQUIPMENT AT NO ADDITIONAL COST.

ALL SWITCHES AND RECEPTACLES FOR THIS PROJECT SHALL BE COMMERCIAL GRADE 20 AMP. ALL DEVICE PLATES SHALL BE SMOOTH PLASTIC; IVORY COLORED ON LIGHT WALLS AND BROWN COLORED ON DARK WALLS. (U.N.O.) PROVIDE WEATHER-PROOF DIE CAST ALUMINUM BOXES & COVERS AT OUTDOOR LOCATIONS. INSTALL "IN-USE" TYPE WP COVERS AT RECEPTACLES AT OUTDOOR WET LOCATIONS. PROVIDE ALUMINUM OR SST DEVICE PLATES AT INDOOR SHOP AREAS.

ALL WIRING SHALL BE INSTALLED IN APPROVED RACEWAYS IF REQUIRED BY CODES. RACEWAYS SHALL BE APPROVED FOR USE INTENDED. ALL ELECTRICAL CONDUCTORS SHOWN ARE 600V COPPER, MINIMUM SIZE CONDUCTOR IS NO. 12 AWG, AND AS RECOMMENDED BY SUPPLIER OF EQUIPMENT AS APPLICABLE.

ALL CONDUIT SHALL BE INSTALLED CONCEALED UNLESS NOTED OTHERWISE. ALL CEILING, FLOOR, AND WALL PENETRATIONS & BOXES SHALL BE CAULKED/SEALED TO PRESERVE FIRE RATINGS AND WATER PROOF INTEGRITY. FIRESTOPPING OF PENETRATIONS IN & THROUGH FIRE RATED FLOORS, CEILINGS & WALLS SHALL BE IN ACCORDANCE WITH IBC & UL AND AS REQUIRED BY THE FIRESTOPPING MANUFACTURER FOR THE CONSTRUCTION TYPE & FIRE RATING SPECIFIED (SEE ARCHITECTURAL DRAWINGS). THE FIRESTOPPING SYSTEM SHALL BE LISTED AND TESTED TO UL-1479 & ASTM E-814. INSTALL IN STRICT COMPLIANCE WITH THE MANUFACTURER INSTRUCTIONS.

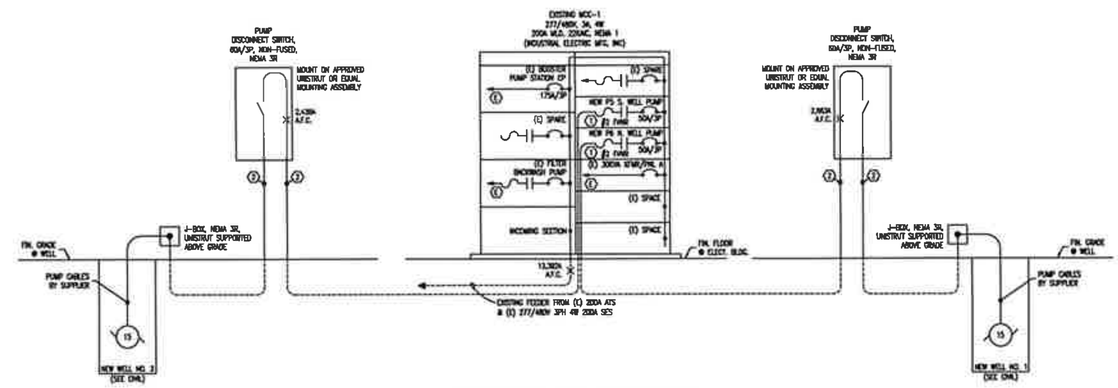
PROVIDE SWITCHBOARDS, SERVICE EQUIPMENT, & PANELBOARDS WITH FULL SIZED BREAKERS AND COPPER BUSSING. LABEL EQUIPMENT AND WIRING PER NEC. PROVIDE TYPED PANEL DIRECTORIES AND IDENTIFY ALL CIRCUITS AND SPACES.

LABEL EQUIPMENT WITH MYCARTA TAGS, 1/4" ENGRAVED LETTERS. PROVIDE WIRE COLOR CODING PER NEC AND ACCEPTED STANDARDS. PROVIDE UNDERGROUND WARNING TAPE AT ALL UNDERGROUND CONDUIT SYSTEMS.

THIS CONTRACT IS TO INCLUDE ALL CONTINGENCIES WHICH MAY ARISE AND WHICH MAY BE REQUIRED TO MAKE A COMPLETE ELECTRICAL SYSTEM.

THE ELECTRICAL CONTRACTOR SHALL VISIT SITE AND DETERMINE EXTENT OF THE WORK. AT COMPLETION OF ELECTRICAL INSTALLATION, PROVIDE OWNER WITH ACCURATE AS-BUILT DRAWINGS INDICATING ALL VARIATIONS FROM CONTRACT DRAWINGS, AND A LETTER TO THE OWNER'S REPRESENTATIVE STATING PROJECT FULLY COMPLIES WITH ALL CONTRACT DOCUMENTS AND IF NOT, HOW INSTALLATION WAS ACCOMPLISHED. ALL CHANGES SHALL BE SUBJECT TO OWNER'S REPRESENTATIVE'S APPROVAL.

PROVIDE NECESSARY LABOR, TOOLS, EQUIPMENT, e.g., VOLTMETER, AMMETER, MEGGER, ETC., AND CHECK ENTIRE ELECTRICAL SYSTEM IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE. ALL TESTING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION OF EQUIPMENT, MATERIALS, ETC., BEING TESTED.



ELECTRICAL ONE-LINE DIAGRAM

NO SCALE

LOAD SUMMARY (EXISTING SES)	AMPS @ 480V/3PH				
EQUIPMENT	HP	QTY	LOAD	TOTAL LOAD	TOTAL AMPS
EXISTING LOAD:					
EXISTING LOAD*	-	-	61,765 VA		
TOTAL EXISTING LOAD*				61,765 VA	
REMOVED LOAD:					
ACTIVE WELL PUMP	5	1	6,319 VA		
TOTAL REMOVED LOAD				6,319 VA	
NEW LOAD:					
WELL PUMPS	15	2	14,918 VA		
OTHER LOAD	-	-	52 VA		
TOTAL NEW LOAD				14,970 VA	
TOTAL				90,416 VA	108.8 AMPS

NOTE:
* EXISTING DEMAND LOAD PER SCE RECORDED METER DATA & PER NEC ARTICLE 220-35 (ASSUMED BALANCED LOADS @ 85% PF, 125% DEMAND)

NOTES (ONE-LINE DIAGRAM):

1. PROVIDE RATED EQUIPMENT & DEVICES BY MANUFACTURER CAPABLE OF SAFELY INTERRUPTING THE AVAILABLE FAULT CURRENT.
2. PROVIDE WARNING LABELS & MARKING BY MANUFACTURER AT ALL SWITCHBOARDS, PANELBOARDS, & INDUSTRIAL CONTROL PANELS/MCC'S LIKELY TO CREATE ARC FLASH CONDITIONS AS REQUIRED BY NEC ART. 110.16.
3. LABEL & MARK MAIN SERVICE DISCONNECT(S) PER NEC.
4. WHERE CONDUIT IS INDICATED AS OVERHEAD METAL CONDUIT, UNDERGROUND/UNDERSLAB PVC CONDUIT IS AN APPROVED ALTERNATE.
5. PHASE NEW ELECTRICAL WORK TO COORDINATE WITH OWNER REQUIREMENTS & REQUIREMENTS INDICATED ON THE CIVIL DRAWINGS. MAINTAIN CONTINUOUS POWER TO ALL OPERATIONAL WATER TREATMENT PLANT EQUIPMENT DURING THE CONSTRUCTION. MAINTAIN THE EXISTING OPERATIONAL WELL PUMP ELECTRICAL IN SERVICE UNTIL AT LEAST ONE OF THE NEW WELL PUMPS IS PUT INTO OPERATION AND ACCEPTED BY THE OWNER. COORDINATE SCHEDULE OF WORK & ALL POWER OUTAGES WITH OWNER. OUTAGES SHALL BE LIMITED TO 30 MINUTE DURATION. ALL OUTAGES SHALL BE SCHEDULED MINIMUM 7 DAYS IN ADVANCE AND APPROVED BY THE OWNER PRIOR TO WORK.
6. ALL WORK SHOWN IS NEW UNLESS NOTED OTHERWISE.

KEY NOTES:

(1) COORDINATE WITH MANUFACTURER AS REQUIRED TO REMOVE & REPLACE THE TWO EXISTING STARTER BUCKETS WITH NEW OR MANUFACTURER REFURBISHED STARTER BUCKETS AS REQUIRED FOR THE NEW PUMPS. AS AN OPTIONAL ALTERNATIVE TO REFURBISHING THE ORIGINAL IEM EQUIPMENT, THE CONTRACTOR MAY VERIFY & REPLACE THE COMPLETE MCC WITH A NEW MCC INCLUDING ALL STARTERS, FEEDER BREAKERS, ACCESSORIES, & COMPONENTS TO MATCH EXISTING (SIEMENS, GE, AB, SQUARE-D, OR EQUAL). MATCH EXISTING EQUIPMENT (ELAPSED TIME METERS, H-O-A SWITCHES, RUN PILOT LIGHTS, ETC.). ORDER STARTERS, CIRCUIT BREAKERS, & OVERLOAD DEVICES TO COORDINATE WITH THE NEW PUMPS. ALL NEW EQUIPMENT SHALL BE COMPATIBLE TO EXISTING EQUIPMENT & EQUIPMENT RATINGS. CONNECT NEW WELL PUMP BRANCH CIRCUITS. LABEL EQUIPMENT WITH ENGRAVED NAMEPLATES PER NEC & SPECIFICATIONS.

(2) (3) #8 CU THWN-2, (1) #10 CU GRD, 1" CONDUIT.

(E) EXISTING FEEDER OR BRANCH CIRCUIT.

JOL ENTERPRISES, INC

JOB No.: 18-017

PREPARED UNDER THE DIRECT SUPERVISION OF:

JAMES R ADLER — E 18119 — R.E. No.

05-09-2018 — DATE — 12/31/18 — REG. EXP.

DATE: 05-09-18 | DRAWN: STAFF | SCALE: NONE | CHECKED: JRA

PROJECT TITLE: PALO VERDE COUNTY WATER DISTRICT WATER WELLS REPLACEMENT PROJECT

ELECTRICAL DETAILS

SHEET 6 OF 6

THG PROJECT NO. 821.028

COUNTY OF IMPERIAL

PUBLIC HEALTH DEPARTMENT

ROBIN HODGKIN, M.P.A.
Director

STEPHEN W. MUNDAY, M.D., M.P.H.
Health Officer

June 4, 2018

Jack Holt, P.E.
The Holt Group
1601 N. Imperial Avenue
El Centro, CA 92243

Subject: Plan Review Approval for the Palo Verde County Water District Water Wells Replacement Project (System No. 1300616)

Mr. Holt:

The Imperial County Division of Environmental Health, Local Primacy Agency (LPA), received the engineering documents, plans, and cost estimates from The Holt Group on April 30, 2018, for the replacement of the existing north and south wells located at, and operated by, the Palo Verde County Water District (PVCWD) water treatment plant. This project intends to replace the two existing wells with two new conforming wells. The existing wells will properly be destroyed once the new wells are constructed. The design for the destruction and construction of the well sites are in accordance with California Water Well Standards for a community water system.

Upon review of the submitted documents, the LPA is approving the project as described below:

- Destruction of the existing north and south well sites in accordance with California Water Well Standards (Bulletin 74-81).
- Construction of two (2) new wells, designated as the north and south wells, in accordance with California Water Well Standards (Bulletin 74-81) for community water supply wells, and all associated appurtenances, including electrical components.
- Perform initial water quality monitoring, as required by Title 22, California Code of Regulations, for the two new wells, after completion of construction.

Construction of these wells shall commence once all agency approvals are obtained, including local building permits. It should be noted that this review was performed to determine whether the proposed project design adequately meets the operating parameters of the PVCWD water treatment plant and for the provision of safe and reliable water to the community of Palo Verde. This review did not consider the engineers opinion of construction timelines or probable costs associated with this project. The project funder shall be contacted to determine what costs may be funded through the grant funds allocated for this project.

Please do not hesitate to contact me if you have any questions or comments.

Sincerely,

Jorge A. Perez
Environmental Health Services Manager
Local Primacy Agency

Cc: Esperanza Colio-Warren, Manager, I.C. Community & Economic Development
Ron Woods, President, Palo Verde County Water District
Jim Minnick, Director, I.C. Planning & Development Services

PUBLIC HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
Main St. Professional Building • 797 Main Street Suite B • El Centro, CA
Phone (442) 265-1888 • FAX (442) 265-1903

SMALL PUBLIC WATER SYSTEM INSPECTION REPORT

WATER SYSTEM ID NUMBER	INSPECTION DATE	SYSTEM CLASSIFICATION	For Official LPA Use Only
1300616	6/26/2018	Community Water System	

Source Classification
- ○ Surface Water
- ● GWUDI
- ○ Ground Water (W/ Treatment)
- ○ Ground Water (No Treatment)

Time In: 13:05
Time Out: 14:45

Inspection Time: 100 minutes

● Attachments Included

Water System Name	Name of Chief Operator
Palo Verde County Water District	Steve Foley
Site Address	**Name of Owner**
Highway 78, Palo Verde	Palo Verde County Water District

Inspector	Also Present (Name)
Daniel Gutierrez	Steve F. & Darin K. (Operators), Todd R. & David B. (The Holt Group), Jarred C. (U.S. Water)

VIOLATION REPORT: The inspection of your small water system was conducted to determine compliance with the California Health and Safety Code (H&SC); Titles 17 and 22 of the California Code of Regulations (CCR); and California Well Standards (DWR Bulletins 74-81 and 74-90). The items checked below are **NOT** in compliance with stated sections of the H&SC, CCR, DWR Bulletins 74-81 and 74-90, and/or Local Ordinances and need to be corrected.

PERMITS
- ☐ Health Permit - §8.02.040
- ☒ **Public Water System Permit - §116525(a)**
- ☐ Technical Report - §116530
- ☐ Source Water Assessment - §64560
- ☐ Change of Ownership - §116525(a)
- ☐ Permit Amendment - §116550(a), §64556

OPERATING CRITERIA
- ☐ Operator Certification - §106885
- ☐ Operational Requirements - §116555
- ☐ Standby Sources - §64414
- ☒ **Source Capacity - §64554(a)**
- ☐ Source Flow Meter - §64561
- ☐ Operation and Maintenance Plan - §64600
- ☐ Surface Water Operations Plan - §64661
- ☐ Watershed Sanitary Survey - §64665

RECORDS/REPORTING
- ☐ Routine Sample Siting Plan - §64422
- ☐ Bacteriological Reporting - §64423.1(c)
- ☒ **Analytical / EDT Reporting - §64469**
- ☐ Record Maintenance - §64470
- ☐ Disinfection Residual/By-Product Monitoring Plan - §64534.8
- ☐ Surface Water Treatment Records - §64662
- ☐ LPA Notification - §64663
- ☐ Surface Water Monthly Report - §64664
- ☐ Groundwater Monthly Report
- ☐ Electronic Annual Report

WATER QUALITY MONITORING
- ☐ Bacteriological Standards - §64421, §64426.1
- ☐ Bacteriological Monitoring - §64423, §64424
- ☐ Inorganic Chemical Standards - §64431
- ☐ Inorganic Chemical Monitoring - §64432
- ☐ Organic Chemical Standards - §64444
- ☒ **Organic Chemical Monitoring - §64445.1**
- ☐ Nitrate/Nitrite Standards - §64432.1
- ☐ Radionuclide Standards - §64442, §64443
- ☐ Secondary MCL Standards - §64449
- ☒ **Disinfection Residuals/By-Product Rule - §64530 (Ch. 15.5)**
- ☐ Lead and Copper Rule - §64675 (Ch. 17.5)

SURFACE WATER TREATMENT
- ☒ **Surface Water Treatment Rule - §64652**
- ☐ Filtration - §64653
- ☐ Disinfection Treatment- §64654
- ☐ Source Water Monitoring - §64655
- ☒ **Turbidity Monitoring - §64655**
- ☒ **Disinfection Monitoring and Contact Time - §64656**
- ☐ LT2 ESWTR Monitoring - 40 CFR §141.70

TREATMENT SYSTEM
- ☒ **Treatment Reliability Features - §64659**
- ☐ Operating Criteria - §64660
- ☐ Additives (NSF 60/61 Approval) - §64590-§64591
- ☐ Chlorinator Functioning - §64650(b)
- ☐ Filter Functioning - §64650(b)
- ☐ Treatment System Maintenance - §64600, §64661

PUBLIC NOTIFICATION
- ☐ Public Notification §116450, §64463, §64666
- ☐ Emergency Notification Plan - §116460
- ☐ Consumer Confidence Report - §116470, §64480-§64483

SURFACE WATER SOURCE PROTECTION
(H&SC, Title 22 CCR)
- ☐ Canal intake vulnerable to contamination
- ☐ Intake pipe screened or otherwise protected from debris
- ☐ Area clear of brush, debris, waste, vectors
- ☐ Sedimentation basin clean
- ☐ Cistern(s) clean and maintained
- ☐ Standby source available
- ☐ Source water vulnerable to possible contaminating activity
- ☐ Inadequate source water protection zone

GROUND WATER SOURCE PROTECTION
(DWR Bulletins 74-81 and 74-90, H&SC)
- ☐ Enclosure of well and appurtenances
- ☐ Well/well casing with cover or lock
- ☐ Well cap watertight
- ☐ Well access openings sealed
- ☐ Well marked for identification
- ☐ Concrete base/well slab constructed properly
- ☐ Check valve installed at well head
- ☐ Backflow prevention protection
- ☐ Area clear of brush, debris, waste, rodent activity
- ☐ Well vulnerable to possible contaminating activity
- ☐ Insufficient well protection zone
- ☐ Well construction - §64560(c)
- ☐ Well destruction - §64560.5
- ☐ Groundwater Rule - §64430, §141.400
- ☐ Sampling of Treated Water Sources - §64432.8

RESERVOIR/STORAGE
- ☐ Storage Capacity - §64554(a)(2)
- ☐ Reservoir Coating/Lining - §64585(a)(1)
- ☐ Contaminant Exclusion - §64585(a)(2)
- ☐ Sampling Tap - §64585(a)(3)
- ☐ Reservoir Design and Construction - §64585(b)
- ☐ Area clear of brush and debris

DISTRIBUTION SYSTEM
- ☐ Distribution System Layout - §64604
- ☐ Minimum Pressure - §64602
- ☐ Water Mains and Valves - §64570-§64578
- ☐ Flushing Pipelines - §64575
- ☐ Equipment Maintenance (pumps, pipes, valves)

CROSS CONNECTION CONTROL
- ☒ **Cross Connection Control Program - §7584**
- ☒ **Adequate Protection Maintained - §7604**
- ☐ Testing Backflow Prevention Devices - §7605
- ☐ Maintenance of Records - §7605

OTHER
- ☐ _____
- ☐ _____
- ☐ _____

OBSERVATIONS/VIOLATION REPORT:
The following observations were noted during the inspection of your drinking water system. Additional detail on each of the identified violations of the California Code of Regulations, California Health and Safety Code, and California Well Standards are also provided below.

The Palo Verde County Water District (District) remains out of compliance with the following violations that were outlined in Compliance Order No. 15-43-15R-001 that was issued by the LPA in December of 2015:

- §116525(a) of the California Health & Safety Code – Public Water System Permit
- §64554(c) of Title 22, California Code of Regulations (CCR) – Source Capacity
- §64652 of Title 22, CCR – Surface Water Treatment Rule
- §64659 of Title 22, CCR – Treatment Reliability Features
- §64655 of Title 22, CCR – Turbidity Monitoring
- §64533 of Title 22, CCR – Disinfection By-Products
- §7584 of Title 22, CCR – Cross Connection Control Program
- §7604 of Title 22, CCR – Adequate Protection Maintained

On March 14, 2017, the District received a fully executed finance agreement from the State Water Resources Control Board for grant funds to assist with plant upgrades, which will address the violations listed above.

Since October of 2015, the District has remained on a Boil Water Order due to a chlorine gas leak that damaged the control panel that controlled the operation of the filter vessel, backwash cycles, and the disinfection process (both pre and post chlorination). Due to the unreliability of manually having to perform these functions, the LPA directed the District to remain on a Boil Water Order until the controls, monitors and disinfection system are repaired and automated. During the time of this inspection, it was verified that the District has commenced construction of the chlorination system and the control panel. Once completed and operational, the LPA will be able to lift the Boil Water Order. The District shall continue plant upgrades to address all violations noted in the above-referenced Compliance Order.

OBSERVATIONS/VIOLATION REPORT Continued:

WATER SOURCE

The District obtains their water from two groundwater wells located within the treatment plant property. The wells are identified as the North and South Well, located approximately 145 feet from each other. Each well is located about 30 feet from the Ox Box lake channel, which is supplied with water from the Colorado River. The channel contains flowing water year-round. In 2012, the LPA made the determination that the District source was classified as GWUDI.

The North Well is currently supplying all the water demand. The North Well currently operates at approximately 200-205 gpm, which is a sufficient supply for the current water demand. Both wells have a Well Driller's Report (No. 43841 & 43842) on file with the LPA. According to the driller's report, the wells were drilled as irrigation wells in 1983 with a 30 foot cement annular seal. The South Well depth is 90 feet and the North Well depth is 70 feet. Static water level was recorded at 7 feet in both wells.

Since 2014, the South Well has not functioned properly and has remained physically disconnected from the treatment plant by the removal of the check valve on the well discharge line. The District has not determined the cause of the well failure. The SRF grant has allocated funds to replace both wells. Currently, the County of Imperial is advertising bids for the replacement of both wells. On June 4, 2018, the LPA issued a Plan Review Approval for the replacement of both wells.

> **Violation:** §64554(c) – Source Capacity. Community water systems using only groundwater shall have a minimum of two approved sources and shall be capable of meeting the Maximum Day Demand with the highest-capacity source off line. The South Well has been disconnected from the water system and only one water source remains available.

TREATMENT PROCESS

The production of water is currently being performed manually due to a lack of a fully operational control panel. The District has commenced construction of the chlorination system and the control panel, and it's currently doing the final warranty work for plant automation. Water is being produced only when the operators are on-site.

The District utilizes filtration and disinfection to treat the groundwater supply. Chlorine is injected to oxidize Iron and Manganese in the treatment process prior to filtration. At the time of this inspection, it was verified that the District replaced the previous chlorine gas injection system with a liquid chlorine injection system. The new chlorination system utilizes a 2,000 gallon NSF-61 double wall plastic tank that contains the 4% sodium hypochlorite liquid solution. According to the Operations Plan, the 4% sodium hypochlorite liquid solution is prepared from a 12.5% sodium hypochlorite solution that is delivered to the site once per month. Chlorine is injected and controlled by two LMI dosing pumps. The entire liquid chlorination system is contained inside a containment concrete box without a top. The LMI dosing pumps are positioned above the lip of the concrete box to prevent flooding the pumps if the chlorination system ever leaks.

Also prior to entering the filtration process, the well water is injected with air for agitation, and then by an in-line injection of potassium permanganate. The potassium permanganate also oxidizes iron and manganese found in the ground water supply.

Following the chemical injections, water enters into the Tonka Horizontal Pressure Filter. The filter is constructed of welded steel and measures 8' in diameter and 16' long. According to the manufacturer, the filter area is approximately 118 square feet and is rated for a maximum flow through of 500 gpm (4.24 gpm/sq.ft.). As a part of the GWUDI classification, the treatment plant cannot exceed a filter loading rate of 3.0 gpm per square foot of filter area. According to records reviewed by the LPA, the plant is currently operating at around 100 gpm, which equates to a filter loading rate of approximately 1.74 gpm per square foot. The filter media consists of 8" of anthracite on the top layer where water enters the filter, followed by a 24" layer of green sand media, and 12" of gravel media on the bottom layer. After down-flowing through the filter media, treated water exits the bottom of the filter and continues towards the treated water storage tank. The filtered water is also injected with liquid 4% sodium hypochlorite to meet required chlorine residuals. The SRF grant has allocated funds to install a second Tonka filter unit.

The filter is currently being manually backwashed three days a week, following the production of water for that day. During each backwash, a 25 hp Berkley backwash pump draws filtered water from the storage tank and delivers it

through the filter at a rate of 1,500 gpm for 12 minutes. A flow meter on the backwash supply line is used to determine that a minimum of 1,500 gpm is being sent through the filter. Backwash water is then deposited into an adjacent drainage basin. The filter media gets regenerated every six months, per manufacturer requirements.

Violations:

1. §64652 – Surface Water Treatment Rule: A supplier using GUDWI shall provide multibarrier treatment that meets the requirements of chapter 17 of Title 22, CCR, and reliably ensures at least (1) A total of 99.9 percent reduction of *Giardia lamblia* cysts through filtration and disinfection; (2) A total of 99.99 percent reduction or viruses through filtration and disinfection; and (3) A total of 99 percent removal of *Cryptosporidium* through filtration. The District cannot currently ensure that the filtration and disinfection treatment provided at the plant reliably meets these reductions due to a lack of redundant filtration equipment, monitoring, and treatment reliability features.

2. §64655 – Turbidity Monitoring: Due to the GWUDI classification, the District is required to continuously monitor and record treated water turbidity. A continuous turbidimeter has been installed in the water system, but its functional operation is being finalized under warranty work. Once this work is completed, the operator should be able to continually record turbidity readings and report them to the LPA as required.

3. §64656 – Disinfection Monitoring & Contact Time: The District has developed a monitoring program within its Operations Plan. The monitoring program, which is found in Section A, 3 and Appendix C of the Operations Plan, can monitor the parameters that affect the performance of the disinfection process.

   To estimate required CT values, the program's total log inactivation required from disinfection is set to vary with E.coli levels detected in raw water samples as following:

PVCWD Increased Treatment Requirements - Giardia				
E.coli (MPN/100mL)	Increased Log Inactivation Required	Total Reduction Required	Credited Log Inactivation (Filtration)	Total Log Inactivation Required (Disinfection)
<20	0	3	2	1.0
≥ 20	0.5	3.5		1.5
≥ 40	1	4		2.0
≥ 100	1.5	4.5		2.5
≥ 200	2	5		3.0

   Appendix C can be used to track temperature, pH, and minimum residual chlorine levels of the disinfected water. With these parameters, the District is able to estimate minimum required CT values for the disinfection process using *"CT Values for Inactivation of Giardia Cysts by Free Chlorine"* tables promulgated under the EPA's *"Disinfection Profiling and Benchmarking Guidance Manual (EPA 815-R-99-013)."* See attachments for copies of these tables.

   To estimate actual CT values, the program monitors the minimum residual chlorine levels (ppm) and the highest/peak flow rate (gpm) in a daily frequency. These two parameters, along with a baffling factor of 0.1 and the effective volume of the contact time storage tank, can be used to estimate actual CT values with the following formula:

$$CT_{actual} = \frac{C \times V_{eff} \times BF}{peak\ flow}$$

   where:
   CT_{actual} = actual CT value (ppm*min),
   C = minimum residual chlorine level (ppm),
   V_{eff} = volume of tank (gal),
   BF = baffling factor, and
   $peak\ flow$ = highest flowrate through tank (gal/min).

Actual CT values can be compared against required CT values for the purpose of evaluating performance of the treatment plant disinfection.

The District is currently not utilizing the form in Appendix C of its Operations Plan, and is submitting a "CT Log" that only includes temperature, flow rate, and chlorine residual. For monitoring the performance of the disinfection process: the District shall: 1) immediately commence utilizing CT calculation form in Appendix C of Operations Plan, and 2) begin submitting complete CT calculation form in Appendix C of the Operations Plan to the LPA by November 10, 2018 and in a monthly frequency thereafter by the 10th day of the following month.

4. §64659 – Treatment Reliability Features: The District currently does not shut down or have a method of notifying a designated person of a filtration or disinfection failure. Also, the District does not have a continuous turbidity monitoring and recording unit on the filter effluent prior to the storage tank. The District must make modifications to the treatment plant alarms and devices in order to comply with this requirement. The SRF grant has funds available to address this violation.

STORAGE FACILITIES

The District utilizes two steel-bolted vertical storage tanks located at the treatment plant facility. Each tank has a storage capacity of 125,000 gallons, for a total storage capacity of 250,000 gallons. The south tank was completely replaced in 2016 with a new tank of the same capacity and construction. The SRF grant has allocated funds to replace the north tank, as it is currently exhibiting signs of interior and exterior rusting. The exact condition of the tank is currently not known. The tanks are currently being operated in parallel. The tank operational level is from 21 to 14 feet, a 7 foot differential. As stated earlier in this report, the tanks are manually filled when the operator turns on the plant to produce water.

DISTRIBUTION SYSTEM

The District provides pressurized potable water to the town of Palo Verde, which is located 1.5 miles north of the water plant. The distribution system consists of approximately 124 single-family residences, 7 commercial businesses, one multi-family property, and the county park located south of the water treatment plant. An 8" main line runs from the treatment plant north to the community and a 6" line runs from the water plant south to the park. Residential service connections have 1" copper lines and commercial service connections have 2" copper lines. Based on operator meter readings, the average daily water demand is between 35,000 to 40,000 gallons.

Violations:

Violation: 17 CCR §7584 – Cross Connection Control Program: The LPA has directed the District to conduct a system-wide cross connection survey since 2010. However, a survey has not been conducted. In order to adequately protect the drinking water supply from potential contamination, a survey must be conducted. The LPA provided a notice to the District on September 28, 2018 requesting a survey to be completed and submitted to the LPA by November 01, 2018. The District must contract a licensed cross connection specialist to conduct the system-wide survey. Any recommendations or directives identified by the specialist will need to be addressed by the District within a specified timeframe, depending on the severity of the findings.

PUMP FACILITIES

The District utilizes and maintains a total of eight pumps, which include the following; two 5 hp Berkeley vertical turbine well pumps, one 25 hp Berkeley backwash water supply pump, and five 25 hp Grundfos distribution pumps.

The distribution pump system consists of two VFD pumps (#1 & #2) and three vertical booster pumps (#3, #4 & #5). The VFD pumps are the primary distribution pumps. Pumps #3 and #4 are the high demand pumps and pump #5 is the fire pump. At the time of this inspection, the two VFD pumps were not working due to a failing check valve on each of them. As a result, pump #3 was being utilized as the distribution pumps. The operators indicated that the check valves from the two high demand pumps were going to be relocated to the two VFD pumps. Once the check valves are relocated, the two high demand pumps will not be operational. The SRF grant has funds available to replace the iron casings with stainless steel casings, and the District will be seeking funds to replace the check valves for all five pumps. It should be noted that since the previous inspection, the District operators have been manually filling the 500 gallon pressure tank to allow it to be operational. According to the operators, the bladder has a small hole that causes it to lose pressure slowly. The District should make arrangements for the replacement of the pressure vessel.

WATER QUALITY & DATA MONITORING

The District samples from the distribution system and from the north well once a month for bacteriological water quality. All samples taken since the previous LPA inspection in March 2017 have been absent of total coliforms. The Bacteriological Sample Site Plan (BSSP) on file with the LPA was submitted and approved in May of 2017. Due to the high levels of iron and manganese historically detected in the wells, the District is required to sample for iron and manganese quarterly. Quarterly samples are being taken and submitted to the LPA routinely.

During the August 2016 lead and copper routine sampling conducted by the District, the 90th percentile for copper was determined to have an Action Level Exceedance. An Action Level Exceedance occurs when the 90th percentile for copper exceeds 1.3 mg/L. The District 90th percentile was calculated at 4.05 mg/L. There was no lead Action Level Exceedance. As a result of the Action Level Exceedance the LPA directed the District to conduct their Initial Water Quality Parameter Monitoring, in a letter dated November 10, 2016. The District completed sampling within the first and second six-month periods (February 08, 2017 & September 12, 2017), and the resulting levels from these samples were below the Action Level Exceedance for copper. Based on the analytical results that did not have an action level exceedances during each of these two consecutive periods, the District may cease completing the steps outlined in the November 10, 2016 letter. The next lead and copper standard tap sample will be due in the summer of 2020. It should also be noted that a Lead & Copper Sample Siting Plan was filed with the LPA on August 20, 2018.

In the last sanitary survey dated March 10, 2017, the LPA directed the District to sample for VOCs within 30 days to avoid being issued a penalty citation. On May 25, 2017, the LPA received analytical results for VOC samples that were taken on August 02, 2016 and reported by BC Laboratories, Inc on 08/08/2016. The District shall ensure that analytical sample results are reported as required in order to avoid penalty citations for failing to report in the required timeframes.

On June 02, 2017, the LPA provided a notice to the District pertaining to a detection of Ethylbenzene and Xylenes from the VOC sample referenced in the paragraph above. The District obtained two follow-up Ethylbenzene and Xylene samples, each with non-detect levels and a DLR of 0.005-ppm. On March 01, 2018, the District was notified that sampling of these VOCs may go in an annual frequency and to be sampled during the month of August.

As required by Title 22 regulations, the District has been obtaining initial monitoring samples for 1,2,3-Trichloropropane (1,2,3-TCP) in a quarterly frequency during 2018. The following table summarizes the results obtained during 2018:

	1st Qtr. - 2018 (3/6/2018)	2nd Qtr. - 2018 (5/8/2018)	2nd Qtr. - 2018 (6/11/2018)	3rd Qtr. - 2018 (7/4/2018)	4th Qtr. - 2018	1st Qtr. – 2019
1,2,3,-TCP (ppb)	N/D	0.016	N/D	N/D	pending	pending

Due to the detection of 1,2,3-TCP during the 2nd Quarter of 2018, the District will be required to obtain an additional quarterly 1,2,3-TCP sample during the 1st Quarter of 2019. For compliance purposes, the 1,2,3-TCP levels for the 2nd Quarter of 2018 shall be 0.008-ppb. If the RAA exceeds the MCL when accounting for the 1,2,3-TCP quarterly results from the 4th Quarter of 2018 and 1st Quarter of 2019, the water system shall be deemed to be in violation of the 1,2,3-TCP MCL and will be required to submit engineering plans for the installation of treatment to reduce 1,2,3-TCP below its prescribed MCL. If the RAA does not exceed the MCL, the system may commence annual sampling with other monitored SOCs.

Violations:

1. **§64530 – Disinfection By-Products Rule:** The District remains in violation of the TTHM MCL and must continue to notify their users for each quarter that they remain in violation of the MCL. Records submitted to the LPA indicate that the Running Annual Average for TTHM is 135 ppb. The following table summarizes data results submitted to the LPA:

	4th Qtr. - 2017	1st Qtr. - 2018	2nd Qtr. - 2018	3rd Qtr. - 2018
TTHM levels (ppb)	150	110	130	150

On October 4, 2017, the LPA issued a "Notice to Proceed with Construction" to the District that

approved the installation of a DBP spray aeration treatment system in the north tank. The District shall continue to sample for disinfection byproducts (DBP) in a quarterly frequency from the locations specified in the current DBP monitoring plan.

Please note: A flow meter on the aeration system's external recycle pump (or an equivalent feature to visually track flow rate through spray nozzle) and a (electrical) run time meter on the blower, both within a spray aeration system, may be considered "surrogate" monitoring, and may be used in lieu of the monthly monitoring that will required when the system installs treatment to reduce DBP levels below applicable MCL. Water systems that: 1) have installed spray aeration systems to treat DBPs exceeding their primary MCL, and that 2) do not have these surrogate monitoring components will be required to sample for DBPs in a monthly frequency. With surrogate monitoring in place, DBP monitoring may be reduced to a quarterly frequency for these type of systems.

2. **§64445.1 – Organic Chemical Monitoring**: On June 02, 2017, the LPA provided a notice to the District pertaining to a detection of Ethylbenzene and Xylenes from the VOC sample referenced above. The District obtained two follow-up Ethylbenzene and Xylene samples, each reporting non-detect levels of these VOCs and DLR of 0.0005-ppm. On March 01, 2018, the District was notified by LPA staff that sampling of these VOCs may go in an annual frequency and to be sampled during the month of August. The District has failed to submit the 2018 August sample results to the LPA. The District shall immediately sample and/or provide sample results of these VOC to the LPA, or the LPA shall take necessary enforcement action to achieve compliance with this requirement.

3. **Violation: 22 CCR §64469(c) – Analytical/EDT Reporting:** Analytical results of all sample analyses completed in a calendar month shall be electronically reported to the State Board no later than the tenth day of the following month. As of the writing of this report, the latest data for both the North and South wells contained in CA Drinking Water Watch ("DWW") database, which receives all electronically reported analytical results, was dated 2011. The DWW database can be accessed at the following link:

   https://sdwis.waterboards.ca.gov/PDWW/

   It should be noted that the LPA is in possession of hard copies for current monitoring results as listed in the Water Quality Monitoring Schedule in the last page of this sanitary survey. The District shall ensure that all monitoring sample results, except for bacteriological results, are reported to the State Water Resources Control Board (Division of Drinking Water Program) electronically using the prescribed EDF, which is typically performed by your contract laboratory.

In addition to submitting all water quality samples results to the LPA, the certified laboratory performing the water quality analysis must also submit the results electronically to the State Water Resources Control Board (Division of Drinking Water Program). It is the responsibility of the District to ensure that the laboratory does submit the sample results through EDT to the State using the prescribed electronic deliverable format.

When submitting the water quality data, the lab must use the following Primary Source (PS Code) to properly identify the District's water system: **1300616-002, 1300616-002, 1300616-003, and 1300616-901. Please see the Water Quality Monitoring Schedule on the last page of this report to determine which PS Code corresponds to each sample type.**

Primary Source Code – To Be Reported by Laboratory to SWRCB	
SOURCE NAME	**PRIMARY SOURCE CODE (PS CODE)**
North Well	1300616-001
South Well	1300616-002
Treatment Plant	1300616-003
Distribution System (Disinfection By-products)	1300616-901

Bacteriological samples are currently not required to be EDT transferred to the State.

MANAGEMENT & OPERATIONS

Please note that the Consumer Confidence Report and its certification have been successfully submitted.

Violation: §116525(a) – Public Water System Permit: As part of the Compliance Order, the District has been directed to obtain a Public Water System Permit by January 1, 2017. The District shall continue working with the State to obtain the necessary funding to upgrade the water treatment plant and to obtain a permit that is reflective of a compliant water system.

OPERATOR CERTIFICATION

The District currently employs Steve Foley as the Chief Plant Operator. Mr. Foley is a T3 and D3 certified water operator. Mr. Foley visits the plant three days a week. Assisting Mr. Foley is Darin Kane, a T1 and D1 operator certified in Arizona. Mr. Kane has applied for reciprocity with the State of California to receive his California certified water operator certification. Mr. Kane visits the plant three days a week with Mr. Foley. Based on the proposed changes to the water systems, the District treatment plant classification will be a T3 and D1 when all plant modifications are completed.

SUMMARY OF ACTION ITEMS

1. The District shall continue notifying their customers to boil their water until the Boil Water Order is lifted by the LPA.
2. For monitoring the performance of the disinfection process: the District shall: 1) immediately commence utilizing CT calculation form in Appendix C of Operations Plan, and 2) begin submitting complete CT calculation form in Appendix C of Operation to the LPA by November 10, 2018 and in a monthly frequency thereafter by the 10th day of the following month.
3. Immediately sample for Ethylbenzene and Xylenes VOCs and submit the results to the LPA.
4. A cross connection control survey shall be performed to identify any potential or existing cross connections, and submit survey report to the LPA by November 1st, 2018.
5. Continue with quarterly monitoring of DBPs. Sample results shall be submitted to the LPA by the 10th day of the following month.
6. Due to the DBP exceedance, the District shall continue posting the notification for each quarter they are in violation of the MCL.
7. Continue quarterly monitoring for 1,2,3-TCP until 1st Quarter of 2019.
8. Continue quarterly monitoring for Iron and Manganese from the wells and the treatment plant effluent.

Environmental Health Inspector
Local Primacy Agency

10/16/2018
Date

NAME of WATER SYSTEM: Palo Verde County Water District DATE: June 26, 2018 SYSTEM No. 1300616

The following chart(s) detail your water quality monitoring. If you are aware of analyses not recorded below, please submit a copy to the attention of Daniel Gutierrez via email at DanielGutierrez@co.imperial.ca.us

Please ensure that your lab samples all constituents for each of the standards listed below.

WATER QUALITY MONITORING SCHEDULE

Source: Ground Water – North Well

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Inorganic Chemical Standard[1]	1/16/2017	1/16/2020	Every 3 years	No
Nitrate Standard	1/11/2018	1/11/2019	Annually	No
Nitrite Standard	1/16/2017	1/16/2020	Every 3 years	No
Secondary MCL Standards[2]	1/16/2017	1/16/2020	Every 3 years	No
Volatile Organic Chemical (VOC) Standard[3]	**8/08/2016**	**8/08/2019**	**Every 3 years**	**No**
Synthetic Organic Chemical (SOC) Standard[4]	12/3/2012	12/3/2021	Every 9 years	No
Radioactivity Standard (Community & NTNC)[5]	3/15/2013	3/15/2019	Every 6 years	No

Source: Ground Water – South Well (Not Functioning)

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Inorganic Chemical Standard	1/23/2014	OVERDUE	Every 3 years	No
Nitrate Standard	10/5/2015	OVERDUE	Annually	No
Nitrite Standard	1/23/2014	OVERDUE	Every 3 years	No
Secondary MCL Standards	1/23/2014	OVERDUE	Every 3 years	No
Volatile Organic Chemical (VOC) Standard	8/22/2013	OVERDUE	Every 3 years	No
Synthetic Organic Chemical (SOC) Standard	12/3/2012	OVERDUE	Every 9 years	No
Radioactivity Standard (Community & NTNC)	3/15/2013	OVERDUE	Every 6 years	No

Distribution System

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Disinfection By-Product Rule (Community or NTNC w/disinfection only)	**7/5/2018**	**4th Quarter 2018**	**Quarterly**	**No**
Lead and Copper Rule (Community or NTNC)	**9/12/2017**	**Summer of 2020**	**Every 3 years**	**No**

[1] **Inorganic Chemical Standards:** aluminum, antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, perchlorate, selenium, and thallium

[2] **Secondary MCL Standards (General Mineral/Physical):** color, copper, foaming agents (MBAS), iron, manganese, MTBE, odor, silver, thiobencarb, turbidity, zinc, total dissolved solids, specific conductance, chloride, and sulfate

[3] **Volatile Organic Chemical (VOC) Standards:** benzene, carbon tetrachloride, 1,2-Dichlorobenze, 1,4-Dichlorobenze, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, 1,3-Dichloropropene, Ethylbenzene, Methyl-tert-butyl ether, Monochlorobenzene, Styrene, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, Toluene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichlororethylene, Trichlorofluoromethane, 1,1,2-Trichloro-1,2,2-Trifluoroethane, Vinyl Chloride, Xylenes

[4] **Synthetic Organic Chemical (SOC) Standards** includes: Alachlor, Atrazine, Bentazon, Benzo(a)pyrene, Carbofuran, Chlordane, 2,4-D, Dalapon, Dibromochloropropane, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dinoseb, Diquat, Endothall, Endrin, Ethylene Dibromide, Glyphosate, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Molinate, Oxamyl, Pentachlorophenol, Picloram, Polychlorinated Biphenyls, Simazine, Toxaphene, 2,3,7,8-TCDD, 2,4,5-TP

[5] **Radioactivity Standard includes:** Radium-226, Radium-228, Gross Alpha particle activity, Uranium

Table C-2. CT Values for Inactivation of Giardia Cysts by Free Chlorine at 5°C

CHLORINE CONCENTRATION (mg/L)	pH<=6 Log Inactivation						pH=6.5 Log Inactivation						pH=7.0 Log Inactivation						pH=7.5 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	16	32	49	65	81	97	20	39	59	78	98	117	23	46	70	93	116	139	28	55	83	111	138	166
0.6	17	33	50	67	83	100	20	40	60	80	100	120	24	49	72	95	119	143	29	57	86	114	143	171
0.8	17	34	52	69	86	103	20	41	61	81	102	122	24	49	73	97	122	146	29	58	88	117	146	175
1	18	35	53	70	88	105	21	42	63	83	104	125	25	50	75	99	124	149	30	60	90	119	149	179
1.2	18	36	54	71	89	107	21	42	64	85	106	127	25	51	76	101	127	152	31	61	92	122	153	183
1.4	18	36	55	73	91	109	22	43	65	97	108	130	26	52	78	103	129	155	31	62	94	125	156	187
1.6	19	37	56	74	93	111	22	44	66	88	110	132	26	53	79	105	132	158	32	64	96	128	160	192
1.8	19	38	57	76	95	114	23	45	69	90	113	135	27	54	81	108	135	162	33	65	98	131	163	196
2	19	39	58	77	97	116	23	46	69	92	115	138	28	55	83	110	138	165	33	67	100	133	167	200
2.2	20	39	59	79	98	118	23	47	70	93	117	140	28	56	85	113	141	169	34	68	102	136	170	204
2.4	20	40	60	80	100	120	24	48	72	95	119	143	29	57	86	115	143	172	35	70	105	139	174	209
2.6	20	41	61	81	102	122	24	49	73	97	122	146	29	58	88	117	146	175	36	71	107	142	178	213
2.8	21	41	62	83	103	124	25	49	74	99	123	148	30	59	89	119	148	178	36	72	109	145	181	217
3	21	42	63	84	105	126	25	50	76	101	126	151	30	61	91	121	152	182	37	74	111	147	184	221

CHLORINE CONCENTRATION (mg/L)	pH=8.0 Log Inactivation						pH=8.5 Log Inactivation						pH=9.0 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	33	66	99	132	165	198	39	79	118	157	197	236	47	93	140	186	233	279
0.6	34	68	102	136	170	204	41	81	122	163	203	244	49	97	146	194	243	291
0.8	35	70	105	140	175	210	42	84	126	168	210	252	50	100	151	201	251	301
1	36	72	108	144	180	216	43	87	130	173	217	260	52	104	156	208	260	312
1.2	37	74	111	147	184	221	45	89	134	178	223	267	53	107	160	213	267	320
1.4	38	76	114	151	189	227	46	91	137	183	228	274	55	110	165	219	274	329
1.6	39	77	116	155	193	232	47	94	141	197	234	281	56	112	169	225	281	337
1.8	40	79	119	159	198	238	48	96	144	191	239	287	58	115	173	230	288	345
2	41	81	122	162	203	243	49	98	147	196	245	294	59	118	177	235	294	353
2.2	41	83	124	165	207	248	50	100	150	200	250	300	60	120	181	241	301	361
2.4	42	84	127	169	211	253	51	102	153	204	255	306	61	123	184	245	307	368
2.6	43	86	129	172	215	258	52	104	156	208	260	312	63	125	189	250	313	375
2.8	44	88	132	175	219	263	53	106	159	212	265	318	64	127	191	255	318	382
3	45	89	134	179	223	268	54	108	162	216	270	324	65	130	195	259	324	389

Source: AWWA, 1991.

Table C-3. CT Values for Inactivation of Giardia Cysts by Free Chlorine at 10°C

CHLORINE CONCENTRATION (mg/L)	pH<=6 Log Inactivation						pH=6.5 Log Inactivation						pH=7.0 Log Inactivation						pH=7.5 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	12	24	37	49	61	73	15	29	44	59	73	88	17	35	52	69	87	104	21	42	63	83	104	125
0.6	13	25	38	50	63	75	15	30	45	60	75	90	18	36	54	71	89	107	21	43	64	85	107	128
0.8	13	26	39	52	65	78	15	31	46	61	77	92	18	37	55	73	92	110	22	44	66	87	109	131
1	13	26	40	53	66	79	16	31	47	63	78	94	19	37	56	75	93	112	22	45	67	89	112	134
1.2	13	27	40	53	67	80	16	32	48	63	79	95	19	38	57	76	95	114	23	46	69	91	114	137
1.4	14	27	41	55	68	82	16	33	49	65	82	98	19	39	58	77	97	116	23	47	70	93	117	140
1.6	14	28	42	55	69	83	17	33	50	66	83	99	20	40	60	79	99	119	24	48	72	96	120	144
1.8	14	29	43	57	72	86	17	34	51	67	84	101	20	41	61	81	102	122	25	49	74	98	123	147
2	15	29	44	58	73	87	17	35	52	69	87	104	21	41	62	83	103	124	25	50	75	100	125	150
2.2	15	30	45	59	74	89	18	35	53	70	88	105	21	42	64	85	106	127	26	51	77	102	128	153
2.4	15	30	45	60	75	90	18	36	54	71	89	107	22	43	65	86	108	129	26	52	79	105	131	157
2.6	15	31	46	61	77	92	18	37	55	73	92	110	22	44	66	87	109	131	27	53	80	107	133	160
2.8	16	31	47	62	78	93	19	37	56	74	93	111	22	45	67	89	112	134	27	54	82	109	136	163
3	16	32	48	63	79	95	19	38	57	75	94	113	23	46	69	91	114	137	28	55	83	111	138	166

CHLORINE CONCENTRATION (mg/L)	pH=8.0 Log Inactivation						pH=8.5 Log Inactivation						pH=9.0 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	25	50	75	99	124	149	30	59	89	118	148	177	35	70	105	139	174	209
0.6	26	51	77	102	128	153	31	61	92	122	153	183	36	73	109	145	182	218
0.8	26	53	79	105	132	158	32	63	95	126	158	189	38	75	113	151	188	226
1	27	54	81	108	135	162	33	65	98	130	163	195	39	78	117	156	195	234
1.2	28	55	83	111	138	166	33	67	100	133	167	200	40	80	120	160	200	240
1.4	28	57	85	113	142	170	34	69	103	137	172	206	41	82	124	165	206	247
1.6	29	58	87	116	145	174	35	70	106	141	176	211	42	84	127	169	211	253
1.8	30	60	90	119	149	179	36	72	108	143	179	215	43	86	130	173	216	259
2	30	61	91	121	152	182	37	74	111	147	184	221	44	88	133	177	221	265
2.2	31	62	93	124	155	186	38	75	113	150	188	225	45	90	136	181	226	271
2.4	32	63	95	127	158	190	38	77	115	153	192	230	46	92	138	184	230	276
2.6	32	65	97	129	162	194	39	78	117	156	195	234	47	94	141	187	234	281
2.8	33	66	99	131	164	197	40	80	120	159	199	239	48	96	144	191	239	287
3	34	67	101	134	168	201	41	81	122	162	203	243	49	97	146	195	243	292

Source: AWWA, 1991.

Table C-4. CT Values for Inactivation of Giardia Cysts by Free Chlorine at 15°C

CHLORINE CONCENTRATION (mg/L)	pH<=6 Log Inactivation						pH=6.5 Log Inactivation						pH=7.0 Log Inactivation						pH=7.5 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	8	16	25	33	41	49	10	20	30	39	49	59	12	23	35	47	58	70	14	28	42	55	69	83
0.6	8	17	25	33	42	50	10	20	30	40	50	60	12	24	36	48	60	72	14	29	43	57	72	86
0.8	9	17	26	35	43	52	10	20	31	41	51	61	12	24	37	49	61	73	15	29	44	59	73	88
1	9	18	27	35	44	53	11	21	32	42	53	63	13	25	38	50	63	75	15	30	45	60	75	90
1.2	9	18	27	36	45	54	11	21	32	43	53	64	13	25	38	51	63	76	15	31	46	61	77	92
1.4	9	18	28	37	46	55	11	22	33	43	54	65	13	26	39	52	65	78	16	31	47	63	78	94
1.6	9	19	28	37	47	56	11	22	33	44	55	66	13	26	40	53	66	79	16	32	48	64	80	96
1.8	10	19	29	38	48	57	11	23	34	45	57	68	14	27	41	54	68	81	16	33	49	65	82	98
2	10	19	29	39	48	58	12	23	35	46	58	69	14	28	42	55	69	83	17	33	50	67	83	100
2.2	10	20	30	39	49	59	12	23	35	47	58	70	14	28	43	57	71	85	17	34	51	68	85	102
2.4	10	20	30	40	50	60	12	24	36	48	60	72	14	29	43	57	72	86	18	35	53	70	88	105
2.6	10	20	31	41	51	61	12	24	37	49	61	73	15	29	44	59	73	88	18	36	54	71	89	107
2.8	10	21	31	41	52	62	12	25	37	49	62	74	15	30	45	59	74	89	18	36	55	73	91	109
3	11	21	32	42	53	63	13	25	38	51	63	76	15	30	46	61	76	91	19	37	56	74	93	111

CHLORINE CONCENTRATION (mg/L)	pH=8.0 Log Inactivation						pH=8.5 Log Inactivation						pH=9.0 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	17	33	50	66	83	99	20	39	59	79	98	116	23	47	70	93	117	140
0.6	17	34	51	68	85	102	20	41	61	81	102	122	24	49	73	97	122	146
0.8	18	35	53	70	88	105	21	42	63	84	105	126	25	50	76	101	126	151
1	18	36	54	72	90	108	22	43	65	87	108	130	26	52	78	104	130	156
1.2	19	37	56	74	93	111	22	45	67	89	112	134	27	53	80	107	133	160
1.4	19	38	57	76	95	114	23	46	69	91	114	137	28	55	83	110	138	165
1.6	19	39	58	77	97	116	24	47	71	94	118	141	28	56	85	113	141	169
1.8	20	40	60	79	99	119	24	48	72	96	120	144	29	59	87	115	144	173
2	20	41	61	81	102	122	25	49	74	98	123	147	30	59	89	118	148	177
2.2	21	41	62	83	103	124	25	50	75	100	125	150	30	60	91	121	151	181
2.4	21	42	64	85	106	127	26	51	77	102	128	153	31	61	92	123	153	184
2.6	22	43	65	86	108	129	26	52	78	104	130	156	31	63	94	125	157	188
2.8	22	44	66	88	110	132	27	53	80	106	133	159	32	64	96	127	159	191
3	22	45	67	89	112	134	27	54	81	109	135	162	33	65	98	130	163	195

Source: AWWA, 1991.

Table C-5. CT Values for Inactivation of Giardia Cysts by Free Chlorine at 20°C

CHLORINE CONCENTRATION (mg/L)	pH<=6 Log Inactivation						pH=6.5 Log Inactivation						pH=7.0 Log Inactivation						pH=7.5 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	6	12	18	24	30	36	7	15	22	29	37	44	9	17	26	35	43	52	10	21	31	41	52	62
0.6	6	13	19	25	32	38	8	15	23	30	38	45	9	18	27	36	45	54	11	21	32	43	53	64
0.8	7	13	20	26	33	39	8	15	23	31	38	46	9	18	28	37	46	55	11	22	33	44	55	66
1	7	13	20	26	33	39	8	16	24	31	39	47	9	19	28	37	47	56	11	22	34	45	56	67
1.2	7	13	20	27	33	40	8	16	24	32	40	48	10	19	29	38	48	57	12	23	35	46	58	69
1.4	7	14	21	27	34	41	8	16	25	33	41	49	10	19	29	39	48	58	12	23	35	47	58	70
1.6	7	14	21	28	35	42	8	17	25	33	42	50	10	20	30	39	49	59	12	24	36	48	60	72
1.8	7	14	22	29	36	43	9	17	26	34	43	51	10	20	31	41	51	61	12	25	37	49	62	74
2	7	15	22	29	37	44	9	17	26	35	43	52	10	21	31	41	52	62	13	25	38	50	63	75
2.2	7	15	22	29	37	44	9	18	27	35	44	53	11	21	32	42	53	63	13	26	39	51	64	77
2.4	8	15	23	30	38	45	9	18	27	36	45	54	11	22	33	43	54	65	13	26	39	52	65	78
2.6	8	15	23	31	38	46	9	18	28	37	46	55	11	22	33	44	55	66	13	27	40	53	67	80
2.8	8	16	24	31	39	47	9	19	28	37	47	56	11	22	34	45	56	67	14	27	41	54	68	81
3	9	16	24	31	39	47	10	19	29	38	48	57	11	23	34	45	57	68	14	28	42	55	69	83

CHLORINE CONCENTRATION (mg/L)	pH=8.0 Log Inactivation						pH=8.5 Log Inactivation						pH=9.0 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	12	25	37	49	62	74	15	30	45	59	74	89	19	35	53	70	88	105
0.6	13	26	39	51	64	77	15	31	46	61	77	92	18	36	55	73	91	109
0.8	13	26	40	53	66	79	16	32	48	63	79	95	19	38	57	75	94	113
1	14	27	41	54	68	81	16	33	49	65	82	98	20	39	59	78	98	117
1.2	14	28	42	55	69	83	17	33	50	67	83	100	20	40	60	80	100	120
1.4	14	28	43	57	71	85	17	34	52	69	86	103	21	41	62	82	103	123
1.6	15	29	44	58	73	87	18	35	53	70	88	105	21	42	63	84	105	126
1.8	15	30	45	59	74	89	18	36	54	72	90	108	22	43	65	86	108	129
2	15	30	46	61	76	91	18	37	55	73	92	110	22	44	66	88	110	132
2.2	16	31	47	62	78	93	19	38	57	75	94	113	23	45	68	90	113	135
2.4	16	32	48	63	79	95	19	38	58	77	96	115	23	46	69	92	115	139
2.6	16	32	49	65	81	97	20	39	59	78	98	117	24	47	71	94	117	141
2.8	17	33	50	66	83	99	20	40	60	79	99	119	24	48	72	95	119	143
3	17	34	51	67	84	101	20	41	61	81	102	122	24	49	73	97	122	146

Source: AWWA, 1991.

Table C-6. CT Values for Inactivation of Giardia Cysts by Free Chlorine at 25°C

CHLORINE CONCENTRATION (mg/L)	pH<=6 Log Inactivation						pH=6.5 Log Inactivation						pH=7.0 Log Inactivation						pH=7.5 Log Inactivation					
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0
<=0.4	4	8	12	16	20	24	5	10	15	19	24	29	6	12	18	23	29	35	7	14	21	28	35	42
0.6	4	8	13	17	21	25	5	10	15	20	25	30	6	12	18	24	30	36	7	14	22	29	36	43
0.8	4	9	13	17	22	26	5	10	16	21	26	31	6	12	19	25	31	37	7	15	22	29	37	44
1	4	9	13	17	22	26	5	10	16	21	26	31	6	12	19	25	31	37	8	15	23	30	38	45
1.2	5	9	14	18	23	27	5	11	16	21	27	32	6	13	19	25	32	38	8	15	23	31	38	46
1.4	5	9	14	18	23	27	6	11	17	22	28	33	7	13	20	26	33	39	8	16	24	31	39	47
1.6	5	9	14	19	23	28	6	11	17	22	28	33	7	13	20	27	33	40	8	16	24	32	40	48
1.8	5	10	15	19	24	29	6	11	17	23	28	34	7	14	21	27	34	41	8	16	25	33	41	49
2	5	10	15	19	24	29	6	12	13	23	29	35	7	14	21	27	34	41	8	17	25	33	42	50
2.2	5	10	15	20	25	30	6	12	18	23	29	35	7	14	21	28	35	42	9	17	26	34	43	51
2.4	5	10	15	20	25	30	6	12	19	24	30	36	7	14	22	29	36	43	9	17	26	35	43	52
2.6	5	10	16	21	26	31	6	12	19	25	31	37	7	15	22	29	37	44	9	18	27	35	44	53
2.8	5	10	16	21	26	31	6	12	19	25	31	37	8	15	23	30	38	45	9	18	27	36	45	54
3	5	11	16	21	27	32	6	13	19	25	32	38	8	15	23	31	38	46	9	18	28	37	46	55
CHLORINE CONCENTRATION (mg/L)	pH=8.0 Log Inactivation						pH=8.5 Log Inactivation						pH=9.0 Log Inactivation											
	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0	0.5	1.0	1.5	2.0	2.5	3.0						
<=0.4	8	17	25	33	42	50	10	20	30	39	49	59	12	23	35	47	58	70						
0.6	9	17	26	34	43	51	10	20	31	41	51	61	12	24	37	49	61	73						
0.8	9	18	27	35	44	53	11	21	32	42	53	63	13	25	38	50	63	75						
1	9	19	27	36	45	54	11	22	33	43	54	65	13	26	39	52	65	78						
1.2	9	18	28	37	46	55	11	22	34	45	56	67	13	27	40	53	67	80						
1.4	10	19	29	38	48	57	12	23	35	46	58	69	14	27	41	55	68	82						
1.6	10	19	29	39	48	58	12	23	35	47	58	70	14	28	42	56	70	84						
1.8	10	20	30	40	50	60	12	24	36	48	60	72	14	29	43	57	72	86						
2	10	20	31	41	51	61	12	25	37	49	62	74	15	29	44	59	73	89						
2.2	10	21	31	41	52	62	13	25	38	50	63	75	15	30	45	60	75	90						
2.4	11	21	32	42	53	63	13	26	39	51	64	77	15	31	46	61	77	92						
2.6	11	22	33	43	54	65	13	26	39	52	65	78	16	31	47	63	78	94						
2.8	11	22	33	44	55	66	13	27	40	53	67	80	16	32	48	64	80	96						
3	11	22	34	45	56	67	14	27	41	54	68	81	16	32	49	65	81	97						

Source: AWWA, 1991.

PUBLIC HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH
Main St. Professional Building • 797 Main Street Suite B • El Centro, CA
Phone (442) 265-1888 • FAX (760) 352-1309

SMALL PUBLIC WATER SYSTEM INSPECTION REPORT

WATER SYSTEM ID NUMBER	INSPECTION DATE	SYSTEM CLASSIFICATION	For Official LPA Use Only
1300616	5/11/2015 & 9/4/2015	Community Water System	

Source Classification
- ○ Surface Water
- ● Ground Water (W/ Treatment)
- ○ Ground Water (No Treatment)

Time In: 10:15
Time Out: 11:30

Inspection Time: 75 minutes

○ Attachments Included

Water System Name: Palo Verde County Water District	**Name of Chief Operator**: Paul Massey
Site Address: Highway 78, Palo Verde	**Name of Owner**: Palo Verde County Water District
Inspector: Jorge A. Perez	**Also Present (Name)**: Paul Massey

VIOLATION REPORT: The inspection of your small water system was conducted to determine compliance with the California Health and Safety Code (H&SC); Titles 17 and 22 of the California Code of Regulations (CCR); and California Well Standards (DWR Bulletins 74-81 and 74-90). The items checked below are **NOT** in compliance with stated sections of the H&SC, CCR, DWR Bulletins 74-81 and 74-90, and/or Local Ordinances and need to be corrected.

PERMITS
- ☐ Health Permit - §8.02.040
- ☒ **Public Water System Permit - §116525(a)**
- ☐ Technical Report - §116530
- ☐ Source Water Assessment - §64560
- ☐ Change of Ownership - §116525(a)
- ☐ Permit Amendment - §116550(a), §64556

OPERATING CRITERIA
- ☐ Operator Certification - §106885
- ☐ Operational Requirements - §116555
- ☐ Standby Sources - §64414
- ☒ **Source Capacity - §64554(c)**
- ☐ Source Flow Meter - §64561
- ☐ Operation and Maintenance Plan - §64600
- ☐ Surface Water Operations Plan - §64661
- ☐ Watershed Sanitary Survey - §64665

RECORDS/REPORTING
- ☐ Routine Sample Siting Plan - §64422
- ☐ Bacteriological Reporting - §64423.1(c)
- ☐ Analytical / EDT Reporting - §64469
- ☐ Record Maintenance - §64470
- ☐ Disinfection Residual/By-Product Monitoring Plan - §64534.8
- ☐ Surface Water Treatment Records - §64662
- ☐ LPA Notification - §64663
- ☐ Surface Water Monthly Report - §64664
- ☐ Groundwater Monthly Report
- ☐ Electronic Annual Report

WATER QUALITY MONITORING
- ☐ Bacteriological Standards - §64421, §64426.1
- ☐ Bacteriological Monitoring - §64423, §64424
- ☐ Inorganic Chemical Standards - §64431
- ☐ Inorganic Chemical Monitoring - §64432
- ☐ Organic Chemical Standards - §64444
- ☐ Organic Chemical Monitoring - §64445.1
- ☐ Nitrate/Nitrite Standards - §64432.1
- ☐ Radionuclide Standards - §64442, §64443
- ☐ Secondary MCL Standards - §64449
- ☒ **Disinfection Residuals/By-Product Rule - §64530 (Ch. 15.5)**
- ☐ Lead and Copper Rule - §64675 (Ch. 17.5)

SURFACE WATER TREATMENT
- ☒ **Surface Water Treatment Rule - §64652**
- ☐ Filtration - §64653
- ☐ Disinfection Treatment- §64654
- ☐ Source Water Monitoring - §64655
- ☒ **Turbidity Monitoring - §64655**
- ☒ **Disinfection Monitoring and Contact Time - §64656**
- ☐ LT2 ESWTR Monitoring - 40 CFR §141.70

TREATMENT SYSTEM
- ☒ **Treatment Reliability Features - §64659**
- ☐ Operating Criteria - §64660
- ☐ Additives (NSF 60/61 Approval) - §64590-§64591
- ☐ Chlorinator Functioning - §64650(b)
- ☐ Filter Functioning - §64650(b)
- ☐ Treatment System Maintenance - §64600, §64661
- ☐ Sampling of Treated Water Sources - §64432.8

PUBLIC NOTIFICATION
- ☐ Public Notification §116450, §64463, §64666
- ☐ Emergency Notification Plan - §116460
- ☐ Consumer Confidence Report - §116470, §64480-§64483

SURFACE WATER SOURCE PROTECTION
(H&SC, Title 22 CCR)
- ☐ Canal intake vulnerable to contamination
- ☐ Intake pipe screened or otherwise protected from debris
- ☐ Area clear of brush, debris, waste, vectors
- ☐ Sedimentation basin clean
- ☐ Cistern(s) clean and maintained
- ☐ Standby source available
- ☐ Source water vulnerable to possible contaminating activity
- ☐ Inadequate source water protection zone

GROUND WATER SOURCE PROTECTION
(DWR Bulletins 74-81 and 74-90, H&SC)
- ☐ Enclosure of well and appurtenances
- ☐ Well/well casing with cover or lock
- ☐ Well cap watertight
- ☐ Well access openings sealed
- ☐ Well marked for identification
- ☐ Concrete base/well slab constructed properly
- ☐ Check valve installed at well head
- ☐ Backflow prevention protection
- ☐ Area clear of brush, debris, waste, rodent activity
- ☐ Well vulnerable to possible contaminating activity
- ☐ Insufficient well protection zone
- ☐ Well construction - §64560(c)
- ☐ Well destruction - §64560.5
- ☐ Groundwater Rule - §64430, §141.400

RESERVOIR/STORAGE
- ☒ **Storage Capacity - §64554(a)(2)**
- ☐ Reservoir Coating/Lining - §64585(a)(1)
- ☐ Contaminant Exclusion - §64585(a)(2)
- ☐ Sampling Tap - §64585(a)(3)
- ☐ Reservoir Design and Construction - §64585(b)
- ☐ Area clear of brush and debris

DISTRIBUTION SYSTEM
- ☐ Distribution System Layout - §64604
- ☐ Minimum Pressure - §64602
- ☐ Water Mains and Valves - §64570-§64578
- ☐ Flushing Pipelines - §64575
- ☒ **Equipment Maintenance (pumps, pipes, valves)**

CROSS CONNECTION CONTROL
- ☒ **Cross Connection Control Program - §7584**
- ☒ **Adequate Protection Maintained - §7604**
- ☐ Testing Backflow Prevention Devices - §7605
- ☐ Maintenance of Records - §7605

OTHER
- ☐ _____
- ☐ _____
- ☐ _____

OBSERVATIONS/VIOLATION REPORT:
The following observations were noted during the inspection of your drinking water system. Additional detail on each of the identified violations of the California Code of Regulations, California Health and Safety Code, and California Well Standards are also provided below.

The Palo Verde County Water District (PV) public water system is classified as a community water system that supplies treated groundwater to a small community consisting of 124 residential service connections and 7 commercial service connections. The water system does not have a current State Domestic Water Supply Permit as required. As described in the previous LPA inspection report dated October 24, 2013, the PV water system source has been reclassified to groundwater under the direct influence of surface water (GWUDI). As a result, the PV water system is required to comply with the Surface Water Treatment Rule (SWTR), as described in Chapter 17, of Title 22, California Code of Regulations.

Violation: §116525(a) – Public Water System Permit: The Palo Verde County Water District shall submit a State permit application to the LPA and provide the following documentation **within 60 days** in order to comply with State permitting requirements prior to January 1, 2016 at the direction of the State Water Resources Control Board:

- A permit application (attached).
- An Operations Plan that contains the information described in Section 64661 of Title 22, of the California Code of Regulations for a treatment plant utilizing groundwater under the direct influence of surface water.
- A cross connection survey.

In order to comply with the SWTR, the PV water system has been directed to incorporate several major changes to the treatment plant process including the installation of a second filter vessel, a continuous turbidimeter, a chlorine residual analyzer, and several other plant modifications to correct outstanding water system deficiencies. These deficiencies include: a storage tank replacement to meet storage capacity requirements, a backflow prevention device on the filter backwash line to eliminate a potential direct cross connection, a disconnection of the filter bypass line, and an aeration treatment system to lower disinfection byproducts below the Maximum Contaminant Level for TTHMs (see the Notice of Violation issued to you on February 21, 2014). Additionally, during this inspection, it was observed that one of the wells is not being utilized for production, and a reduction in pumping capacity and source quality has been noted for the other remaining groundwater well. Rehabilitation and/or re-drilling of the wells is necessary to maintain adequate

OBSERVATIONS/VIOLATION REPORT Continued:

source capacity for this community water system. These violations have been described in this sanitary survey report for your water system based on observations made at the water system on May 11, 2015 and at this follow up inspection on September 4, 2015.

Due to the severity of the violations and a failure to correct them in a timely manner, the LPA will be issuing you a Compliance Order that will dictate timeframes for compliance. Failure to comply with the timeframes outlined in the Compliance Order may result in civil penalties to be issued in an amount not to exceed twenty-five thousand dollars ($25,000) for each separate violation, or for continuing violations, for each day that violation continues (Section 116725(b) of the California Health & Safety Code). Furthermore, the LPA has the authority under Sections 116660 and 116665 of the California Health & Safety Code to seek an injunction in court directing you to comply with the Safe Drinking Water Act and any orders issued thereunder by this agency, or to petition superior court for the appointment of a receiver to assume possession of the water system and to operate it as the court prescribes.

WATER SOURCE

The PV water system obtains their water from two groundwater wells located within the treatment plant property. The wells are identified as the North Well and South Well, and are located approximately 145 feet from each other and are located approximately 30 feet from the Ox Bow Lake channel. The Ox Bow Lake channel is supplied with water from the Colorado River. In or around 2012, the LPA made the determination that the PV water source was classified as GWUDI.

The North Well is currently supplying all the water demand. The North Well currently operates at approximately 200-205 gpm, which is sufficient supply for the water demand. Both wells have a Well Driller's Report (No. 43841 & 43842) on file with the LPA. According to the driller's report, the wells were drilled as irrigation wells in 1983 with a 30 foot annular seal. The South Well depth is 90 feet and the North Well depth is 70 feet. Static water level was recorded at 7 feet in both wells.

At the time of this inspection, the South Well was not functioning and was not in service due to possible clogging in the well casing. According to the operator, the well has not been operational for over a year and currently has the well discharge line physically disconnected from the treatment plant supply line (**Photo 1**). The LPA recommends that the PV water system consult with a licensed well driller to determine what repairs are needed to get the South Well functional. The grant application is requesting funds to rehabilitate both wells, or if deemed necessary by a licensed well driller, re-drill and replace the wells.

> **Violation:** §64554(c) – Source Capacity. Community water systems using only groundwater shall have a minimum of two approved sources and shall be capable of meeting the Maximum Day Demand with the highest-capacity source off line. The South Well has been disconnected from the water system and only one water source is currently available.

TREATMENT PROCESS

The PV water system utilizes filtration and disinfection for their treatment process. Prior to entering the filtration process the well water injected with air for agitation, followed by an in-line injection of potassium permanganate, then an in-line injection of chlorine gas. The potassium permanganate and the chlorine gas assist in oxidizing the iron and manganese in the raw water supply. Following the chemical injections water enters into the Tonka Horizontal Pressure Filter. The filter is constructed of welded steel and measures 8' tall and 16' wide. According to the manufacturer, the total filter is approximately 118 square feet and is rated for a maximum flow through of 500 gpm (4.24 gpm/sq.ft.).
As a part of the GWUDI classification, and due to the current filter set-up, the PV water system cannot exceed a filter loading rate of 3.0 gpm per square foot of filter area. The plant is currently operating at around 205 gpm, which equates to a filter loading rate of approximately 1.74 gpm per square foot. The filter media consists of 8" of anthracite on the top layer where water enters the filter, followed by a 24" layer of green sand media, and 12" of gravel media on the bottom layer. After down-flowing through the filter media, treated water exits the bottom of the filter and continues towards the treated water storage tank. Prior to entering the tanks, the water supply is dosed with chlorine gas through a 1" PVC line that re-circulates filtered water with the chlorine gas.

The chlorine gas is stored in a brick building that houses four 150-pound gas cylinders. The cylinders are kept on

The chlorine gas is stored in a brick building that houses four 150-pound gas cylinders. The cylinders are kept on digital scales and are chained at all times. The building is equipped with a gas leak detection system that is tested monthly, and an auto change-over system that detects when a cylinder gas level is low. According to the operator, three cylinders are used per month. Cylinder deliveries to the water plant are once a month by a local supplier. The grant application is requesting funds to replace the chlorine gas system with a calcium hypochlorite system due to the danger in handling and storing chlorine gas.

The filter is currently being backwashed twice a week. According to the operator, the filters can be backwashed automatically through the PLC system, but is currently being done manually through the PLC system. During each backwash, a 25hp Berkley backwash pump draws filtered water from the storage tank and delivers it through the filter at a rate of 1,500 gpm for 12 minutes. A flow meter on the backwash supply line is used to determine that a minimum of 1,500 gpm is being sent through the filter. Backwash water is then deposited into an adjacent drainage basin. The filter media gets regenerated every six months, per manufacturer requirements.

Violations:

1. **§64652 – Surface Water Treatment Rule:** A supplier using GUDWI shall provide multibarrier treatment that meets the requirements of chapter 17 of Title 22, CCR, and reliably ensures at least (1) A total of 99.9 percent reduction of *Giardia lamblia* cysts through filtration and disinfection; (2) A total of 99.99 percent reduction or viruses through filtration and disinfection; and (3) A total of 99 percent removal of *Cryptosporidium* through filtration. The PV water system cannot currently ensure that the filtration and disinfection treatment provided at the plant reliably meets these reductions due to a lack of redundant filtration equipment, monitoring, and treatment reliability features.

2. **§64655 – Turbidity Monitoring:** Due to the GWUDI classification, the PV water system is required to continuously monitor and record treated water turbidity. However, a continuous turbidimeter has not been installed. An SRF grant application has been submitted requesting funds to install a turbidimeter.

3. **§64656 – Disinfection Monitoring & Contact Time:** The PV water system must develop, submit, and conduct a monitoring program to measure the parameters that affect the performance of the disinfection process. The monitoring program must also demonstrate how the PV water system calculates and determines contact time. The monitoring program must be included in an Operations Plan that must be drafted and submitted.

4. **§64659 – Treatment Reliability Features:** The PV water system currently does not shut down or have a method of notifying a designated person of a filtration or disinfection failure. Also, the PV water system does not have a continuous turbidity monitoring and recording unit on the filter effluent prior to the storage tank. The PV water system must make modifications to the treatment plant alarms and devices in order to comply with this requirement. An SRF grant application has been submitted requesting funds to make these modifications.

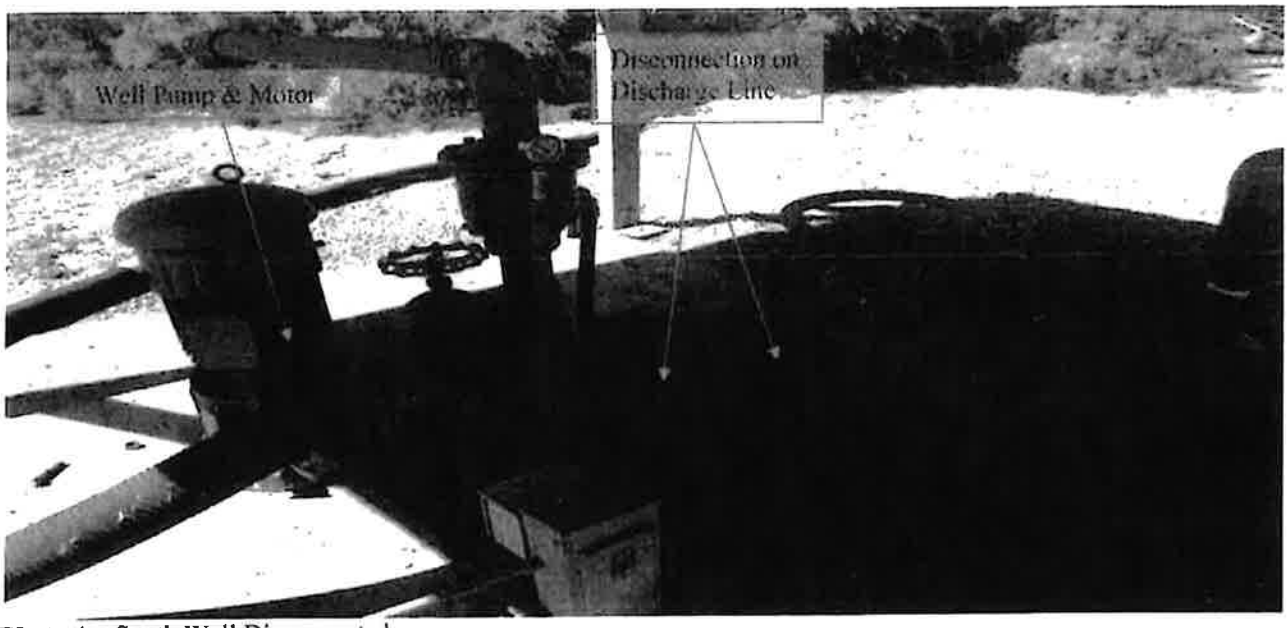


Photo 1 – South Well Disconnected

STORAGE FACILITIES

The PV water system has two vertical storage tanks, each with a capacity of 125,000 gallons. The bolted steel tanks are located within the water plant property. The south tank is currently not in use due to a catastrophic failure of the base of the tank that occurred in the latter part of 2013. The base of the tank became corroded and a hole was formed, which did not allow the tank to hold water and made it no longer useable. The PV water system is currently operating off of the north tank. The tank begins to fill when the float switch in the tank signals a drop in the water level and turns on the well pump. Based on the average daily demand of approximately 35,000 to 40,000 gallons, along with the fire department demand of 180,000 gallons (1,500 gpm for 2 hours), the current storage capacity is not sufficient to meet the system's maximum demand.

The Imperial County Community and Economic Development office is currently funding the replacement of the south tank with grant funds obtained through the federally funded CDBG program. A plan review application has been submitted to the LPA and the plan calls for the removal of the existing tank and replacing it with an identical steel-bolted tank of the same capacity. At the time of this report, construction of the tank had not started, but it is anticipated to start within the coming weeks. The LPA has requested that a backflow device be installed on the backwash water supply line coming from the storage tank to prevent the possibility of backwash water entering the treated water supply. An SRF grant application has been submitted requesting funds to replace the deteriorating north tank and install an aeration unit to reduce disinfection byproduct levels to below safe drinking water limits.

DISTRIBUTION SYSTEM

The PV water system provides pressurized potable water to the town of Palo Verde, which is located 1.5 miles north of the water plant. The PV water system supplies water to approximately 124 single-family residences, 7 commercial businesses, one multi-family property, and the county park located south of the water treatment plant. An 8" main line runs from the treatment plant to the community and a 6" line runs from the water plant to the park. Residential service connections have 1" copper lines and commercial service connections have 2" copper lines. Based on meter readings taken immediately after the distribution pumps at the water plant, the PV water system currently uses approximately 35,000 to 40,000 gallons per day.

Violations:

1. §7584 – Cross Connection Control Program: The LPA has directed the PV water system to conduct a system-wide cross connection survey since 2010. However, a survey has not been conducted. In order to adequately protect the drinking water supply from potential contamination, a survey must be conducted. The PV water system must contract a licensed cross connection specialist to conduct the system-wide survey. Any recommendations or directives identified by the specialist will need to be addressed by the PV water system by a certain timeframe, depending on the severity of findings.

2. §7604 – Adequate Protection Maintained: The LPA observed a direct cross connection at the treatment plant that must be abated immediately. Water pumped from the wells has a direct connection into the storage tanks that allows the filters to be by-passed (**Photo 2**). It is likely that this setup was how the water system was operated prior to installation of the filter. The PV water system has been directed to remove the existing valve and install a flange cover on each end of the pipes. A backflow prevention device must also be installed on the backwash line between the storage tank and the filter vessel to protect against potential contamination. Treated water from the storage tank is used to backwash the filter vessel, but there is only a check valve to prevent backwash water from entering the storage tank. A cross connection specialists shall make the determination as to what type of device is required for adequate protection.

PUMP FACILITIES

The PV water system utilizes and maintains a total of eight pumps, which include the following; two 5hp Berkeley vertical turbine well pumps, one 25hp Berkeley backwash water supply pump, and five 25hp Grundfos distribution pumps. A 500 gallon pressure vessel helps maintain pressure at around 50psi in the distribution lines.

The distribution pump system consists of two VFD pumps (#1 & #2) and three vertical pumps (#3, #4 & #5). At the time of this inspection the #2 VFD pump and the #3 and #4 vertical pumps were not operational. According to the operator the parts to repair the VFD pump were being ordered, while the casings for the other pumps were corroded and were not able to contain water when operating. The corrosion of the casings is due to the existing casing material being iron instead of stainless steel. Due to the use of chlorine in the water supply, the iron casings have corroded. An SRF grant application has been submitted requesting funds to replace the iron casings with stainless steel casings for all five pumps.

Photo 2 – Cross Connection from Wells to Storage Tank

WATER QUALITY & DATA MONITORING

The PV water system is required to sample once a month for bacteriological water quality from the distribution system. All samples are being taken and submitted as required and the PV water system also samples monthly from the active well. All monthly have been absent of total coliform bacteria, with the exception of a positive sample in July 2014. Follow-up samples were taken and it was found to be an isolated incident that did not result in an *E. Coli* positive or Total Coliform Rule violation.

Due to the treatment for iron and manganese, which are Secondary MCLs, the PV water system is required to sample untreated and treated water sources for iron and manganese **every quarter**. Untreated samples shall be taken prior to filtration and treated water samples shall be taken after filtration. The untreated sample will provide a baseline for the raw water quality, while the treated water samples will confirm that the treatment plant is properly removing the iron and manganese. The results shall be submitted to the LPA no later than the 10th day of the following month.

In addition to submitting all water quality samples results to the LPA, the certified laboratory performing the water quality analysis must also submit the results electronically to the State Water Resources Control Board (Division of Drinking Water Program). It is the responsibility of the PV water system to ensure that the laboratory does submit the sample results through Electronic Data Transfer (EDT) to the State using the prescribed electronic deliverable format. When submitting the water quality data to the State, the lab must us the following Primary Source Code (PS Code) to properly identify the PV water system: **1300616-001 & 1300616-002.**

Primary Source Code – To Be Reported by Laboratory to SWRCB	
SOURCE NAME	**PRIMARY SOURCE CODE (PS CODE)**
North Well	1300616-001
South Well	1300616-002

Bacteriological, Lead and Copper, and Disinfection By-Product (TTHMs and HAA5s) samples are currently not required to be EDT transferred to the State. Please note that Nitrate samples from the North Well are due in October 2015.

Violation: §64530 – Disinfection By-Products Rule: The PV water system continues to be in violation of the Total Trihalomethanes Maximum Contaminant Level (MCL). In February 2014, the LPA issued a Notice of Violation for the MCL violation that included notifying the public about the MCL exceedance and directed the PV water system to submit a plan outlining their methods to remove/reduce disinfection by-products. As part of the grant funding, the PV has requested the installation of a spray aeration system in one of the two finished

water storage tanks. An aeration system is considered a treatment process to remove/reduce disinfection by-products in the treated water supply. The PV Water System must continue to take quarterly TTHM samples and submit the results to the LPA by the tenth day of the following month. The most recent sample taken on May 20, 2015 was 130 ppb and the Maximum Contaminant Level for drinking water is 80 ppb. The current running annual average from the last four quarters is 87 ppb.

MANAGEMENT & OPERATIONS

A written response to the Summary of Action Items listed below is required to be submitted to the LPA **within 30 days** from the date of this report. The response can be in a letter or email format.

OPERATOR CERTIFICATION

The PV water system currently employs Paul Massey as the Chief Plant Operator. Mr. Massey is a T1 and D1 certified water operator. Mr. Massey visits the water plant five days a week. The PV water system is classified as a T2 and D1 water system due to the reclassification to a GWUDI system. Based on the proposed water system treatment plant changes outlined in this report, which include the installation of an aeration system, the PV water system will ultimately be classified as a T3 water plant. Therefore, the PV water system shall ensure that their operator is adequately certified.

SUMMARY OF ACTION ITEMS REQUIRED FOR THE PALO VERDE COUNTY WATER DISTRICT

1. Immediately submit a permit application, and **within 60 days** submit the the supporting permit documentation to the LPA to obtain a State permit prior to January 1, 2016.
2. Continue with quarterly monitoring of disinfection by-products. Sample results shall be submitted to the LPA by the 10th of the following month.
3. A cross connection control survey shall be performed to identify any potential or existing cross connections. A date for when the survey has been scheduled shall be submitted to the LPA.
4. Starting immediately, quarterly iron and manganese samples shall be taken from the untreated and treated water sources. The sample results shall be submitted to the LPA by the 10th day of the following month.

Environmental Health Inspector
Local Primacy Agency

9/18/2015
Date

NAME of WATER SYSTEM: Palo Verde County Water District DATE: September 4, 2015 SYSTEM No. 1300616

The following chart(s) detail your water quality monitoring. If you are aware of analyses not recorded below, please submit a copy to the attention of Jorge Perez at the address listed on the cover of this inspection report.

Please ensure that your lab samples all constituents for each of the standards listed below.

Source: GROUNDWATER – NORTH WELL

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Inorganic Chemical Standard[1]	1/23/2014	1/23/2017	Every 3 years	No
Nitrate Standard	1/19/2015	1/19/2016	Annually	No
Nitrite Standard	1/23/2014	1/23/2017	Every 3 years	No
Secondary MCL Standards[2]	1/23/2014	1/23/2017	Every 3 years	No
Volatile Organic Chemical (VOC) Standard[3]	8/22/2013	8/22/2016	Every 3 years	No
Synthetic Organic Chemical (SOC) Standard[4]	12/3/2012	12/3/2021	Every 9 years	No
Radioactivity Standard (Community & NTNC)[5]	3/5/2013	3/5/2019	Every 6 years	No

Source: GROUNDWATER – SOUTH WELL

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Inorganic Chemical Standard	1/23/2014	1/23/2017	Every 3 years	No
Nitrate Standard	10/8/2014	10/8/2015	Annually	No
Nitrite Standard	1/23/2014	1/23/2017	Every 3 years	No
Secondary MCL Standards	1/23/2014	1/23/2017	Every 3 years	No
Volatile Organic Chemical (VOC) Standard	8/22/2013	8/22/2016	Every 3 years	No
Synthetic Organic Chemical (SOC) Standard	12/3/2012	12/3/2021	Every 9 years	No
Radioactivity Standard (Community & NTNC)	3/5/2013	3/5/2019	Every 6 years	No

Distribution System

CHEMICAL	LAST TEST	TEST DUE	FREQUENCY	WAIVER
Disinfection By-Product Rule (Community or NTNC w/disinfection only)	**5/20/2015**	**3rd Quarter 2015**	**Quarterly**	**No**
Lead and Copper Rule (Community or NTNC)	9/27/2013	9/27/2016	Every 3 years	No

[1] **Inorganic Chemical Standards:** aluminum, antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, hexavalent chromium, mercury, nickel, nitrate, nitrite, perchlorate, selenium, and thallium

[2] **Secondary MCL Standards (General Mineral/Physical):** color, copper, foaming agents (MBAS), iron, manganese, MTBE, odor, silver, thiobencarb, turbidity, zinc, total dissolved solids, specific conductance, chloride, and sulfate

[3] **Volatile Organic Chemical (VOC) Standards:** benzene, carbon tetrachloride, 1,2-Dichlorobenze, 1,4-Dichlorobenze, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethylene, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, Dichloromethane, 1,2-Dichloropropane, 1,3-Dichloropropene, Ethylbenzene, Methyl-tert-butyl ether, Monochlorobenzene, Styrene, 1,1,2,2-Tetrachloroethane, Tetrachloroethylene, Toluene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichlororethylene, Trichlorofluoromethane, 1,1,2-Trichloro-1,2,2-Trifluoroethane, Vinyl Chloride, Xylenes

[4] **Synthetic Organic Chemical (SOC) Standards** includes: Alachlor, Atrazine, Bentazon, Benzo(a)pyrene, Carbofuran, Chlordane, 2,4-D, Dalapon, Dibromochloropropane, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dinoseb, Diquat, Endothall, Endrin, Ethylene Dibromide, Glyphosate, Heptachlor, Heptachlor Epoxide, Hexachlorobenzene, Hexachlorocyclopentadiene, Lindane, Methoxychlor, Molinate, Oxamyl, Pentachlorophenol, Picloram, Polychlorinated Biphenyls, Simazine, Toxaphene, 2,3,7,8-TCDD, 2,4,5-TP

[5] **Radioactivity Standard includes:** Radium-226, Radium-228, Gross Alpha particle activity, Uranium

Attachment B.

Environmental Assessment for HUD-funded Proposals prepared October 2014

U.S. Department of Housing and Urban Development
San Francisco Regional Office - Region IX
600 Harrison Street
San Francisco, California 94107-1387
www.hud.gov
espanol.hud.gov

Environmental Assessment

for HUD-funded Proposals

Recommended format per 24 CFR 58.36, revised March 2005
[Previously recommended EA formats are obsolete].

Project Identification: Palo Verde Water System Improvements

Preparer: Josh Menvielle, Imperial County Community & Economic Development

Responsible Entity: County of Imperial

Month/Year: October 2014

Environmental Assessment

Responsible Entity: County of Imperial
[24 CFR 58.2(a)(7)]

Certifying Officer: Ralph Cordova, Jr.
[24 CFR 58.2(a)(2)]

Project Name: Palo Verde Water System Improvements

Project Location: Project is located in Palo Verde, CA in the vicinity of Highway 78 and Butler Road in the northeast corner of Imperial County.

Estimated total project cost: $1,414,901

Grant Recipient: County of Imperial
[24 CFR 58.2(a)(5)]

Recipient Address: 940 West Main Street, Ste 203, El Centro, CA 92243

Project Representative: Esperanza C. Warren

Telephone Number: (760) 482-4900

Conditions for Approval: (List all mitigation measures adopted by the responsible entity to eliminate or minimize adverse environmental impacts. These conditions must be included in project contracts and other relevant documents as requirements). [24 CFR 58.40(d), 40 CFR 1505.2(c)]

Mitigation Measures

Noise

MM N-1 Construction noise from a single piece of equipment, or a combination of equipment shall not exceed 70 dB when averaged over an 8-hour period and measured at the nearest sensitive receptor.

MM N-2 Construction Equipment operation is limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No construction shall take place on Sundays.

Cultural Facilities

CF-1 In the event that archaeological/paleontological resources are discovered during demolition or construction activities, all grading and construction work on the project site shall be suspended until the significance of the features can be determined by a qualified archaeologist/paleontologist

meeting the Secretary of the Interior's Professional Qualifications Standards. Identified cultural resources should be recorded on DPR 523 (A-J) historic resource recordation forms. Prehistoric resources include chert or obsidian flakes, projectile points, and other flaked-stone artifacts; mortars, grinding sticks, pestles, and other groundstone tools; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or adobe foundations or walls; structures and remains with square nails; mine shafts, tailings, or ditches; and refuse deposits or bottle dumps, often located in old wells or privies. The qualified archaeologist/paleontologist shall make recommendations for measures necessary to protect any unique archaeological or paleontological resource or shall undertake data recover, excavation, analysis, and curation of archaeological/paleontologist materials. County staff will consider such recommendations and implement them where they are feasible in light of project design as previously approved by the County.

CF-2 If human remains are discovered, all work shall be halted immediately and the County Coroner must be notified, according to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code. If the remains are determined to be Native American, the Coroner will notify the Native American Heritage Commission, and the procedures outlined in the CEQA Guidelines of Title 14 of the California Code of Regulations, Section 15064.5(d).

FINDING: [58.40(g)]

X **Finding of No Significant Impact**
(The project will not result in a significant impact on the quality of the human environment)

___ **Finding of Significant Impact**
(The project may significantly affect the quality of the human environment)

Preparer Signature: _____ **Date:** 10/15/14

Name/Title/Agency: Josh Menvielle, Economic Development Coordinator, Imperial County Community & Economic Development

RE Approving Official Signature: _____ **Date:** 10/16/14

Name/Title/Agency: Ralph Cordova, Jr., County Executive Officer, County of Imperial

Statement of Purpose and Need for the Proposal: [40 CFR 1508.9(b)]

The unincorporated community of Palo Verde currently utilizes a water treatment plant that is at risk for multiple violations due to the declining state of the facility. The water treatment plant is necessary to support the townsite as well as any future economic or residential growth in the community.

The water and wastewater districts in Imperial County have consistently faced violations and struggled to meet the increasingly stringent regulations imposed on them by state and local enforcement agencies. Due to the small size of the district, it is incredibly challenging to continually maintain the water treatment facility and make the required upgrades every year.

The Palo Verde Water Treatment project will serve two main purposes. The first is to protect the health and safety Palo Verde residents by providing them access to clean and sanitary potable water. The second is to improve the quality of life by providing a potential avenue for enhanced amenities in the community and allowing for future growth.

Description of the Proposal: Include all contemplated actions which logically are either geographically or functionally a composite part of the project, regardless of the source of funding. [24 CFR 58.32, 40 CFR 1508.25]

Water wells

Clean and inspect wells to determine whether new wells need to be drilled and the existing ones abandoned. If this is necessary, it will be included as part of the project.

Replacement of Water Storage Tanks (north and south tanks)

- Dismantle and recycle existing 29' Diameter x 24' Height Bolted Steel Storage Tank
- Repair/modify structural concrete foundation pad to meet building requirements
- Install 29' diameter x 24' height (125,000 gallon) fabricated, powder coated bolted steel storage tank meeting AWWA requirements
- Provide and install new factory powder coated steel cone roof and flat steel floor
- Provide and install new appurtenances, including roof hatch, roof vent, overflow piping, inlet/outlet nozzles, exterior ladder with backguard, handrails, and liquid level indicator
- Conduct vacuum and hydro testing

Structural Repairs of Storage Tank (north tank) if feasible

- Remove existing 29' diameter deck, floor, and structure
- Provide and install new steel cone roof with new powder coatings
- Provide and install new internal structure with new powder coatings

Upgrades and Modifications to Water Treatment System

- Install chlorine analyzer and continuous turbidimeter, with digital recorder, plant shut down alarms, and controls to meet the Surface Water Treatment Rule
- Modify water storage tank plumbing to fill the tanks in series, and to incorporate an aeration unit, blower, and controls for VOC volatilization in the second water storage tank
- Replace chlorine gas disinfection system
- Install additional multi-media treatment filter, static mixer, clarifier, controls, and piping as necessary for reducing organics and turbidity

Rehabilitation of Existing Wells (replacement if necessary)

- Clean and/or replace, and disinfect well casing, lining, and screens
- Overdrill and reconstruct well casing and screens as necessary. Replacement of annular seal to meet minimum protection depths for a community water well

Disinfection

- Perform disinfection of tanks in accordance with AWWA C-652 Disinfection of Water Tanks
- Disinfect wells and piping in accordance with AWWA standards

Cross Connection Controls

- Install backflow devices such as check valves, reduced pressure devices, or hose bib vacuum breakers and piping in accordance with AWWA standards

Booster Pump Station

- Replace pump casings

Water Filter

- Modification to the filter system to add an additional filter.

Existing Conditions and Trends: Describe the existing conditions of the project area and its surroundings, and trends likely to continue in the absence of the project. [24 CFR 58.40(a)]

The Palo Verde Water treatment facility is located approximately two miles south of Palo Verde along State Route 78. Treated water is delivered from the treatment plant through an 8-inch water main located on the east shoulder of SR78 for the entire two mile stretch.

The Palo Verde Water System was first constructed in 1983 and consisted of two wells, with a capacity of 250 gallons per minute (gpm), and a pipeline distribution network. There are 142 active connections to the water system. During 1988, a sand filter and a

chlorination/potassium permanganate injection system were installed to reduce iron and manganese concentrations in the water. A 20 horsepower pump supplies water to backwash the filter. The spent backwash water flows into an on-site basin that is partly lined with concrete. In 2001, two bolted 125,000 gallon ground storage tanks were constructed at the treatment plant.

Water is pumped to and from both tanks simultaneously. Treated water from the storage tanks is pumped to the distribution system through a booster pump station. The booster pump station was installed in 2008, and consists of five vertical pumps that are controlled by a variable frequency drive that changes the speed of the pumps based on demand and keeps the pressure in the system constant. A standby generator is available in the case of electrical power failure. The water plant also utilizes an array of solar panels for some of its energy requirements. A site plan of the current water plant is available **(Attachment #1)**

PVCWD has conducted testing of the treated water for Total Trihalomethanes (TTHM). TTHMs are formed when organics come into contact with chlorine. The maximum contaminant level (MCL) is 80ppb, and PVCWD has tested over 100ppb in TTHM concentrations with an average of 97ppb. On February 21, 2014, the Imperial County Public Health Department (ICPHD) issued a Notice of MCL Exceedance to PVCWD. The high TTHM indicates that the surface water may be influencing the groundwater at the plant, or there are high levels of iron bacteria in the wells. The wells are located near the Colorado River and have been deemed to be under the influence of surface water by ICPHD.

Water Wells

There are problems with the two existing wells. They are showing signs of failure. The south well is down to a production rate of 30 gallons per minute. The production of the north well is down to just over 200 gpm from an initial capacity of 400 gpm. The north well cannot be operated at 200 gpm due to the high solid concentrations at that flow rate.

Water Storage Tanks

The south tank (125,000) is not in use due to a substantial leak near the bottom of the tank. It can no longer store treated water. The north tank is the sole means to store water for the community. As a result, there is an insufficient supply for both public consumption and County Fire Department needs. The north tank is also starting to corrode and will need to be repaired or replaced soon. If repairs do not happen quickly, PVCWD will be without a method to supply water to the townsite.

Chlorination Treatment System

The ICPHD has identified an alternative to the chlorination injection system. The alternative involves changing the chlorine system to either a calcium hypochlorite

system or a sodium hypochlorite system. Gas chlorine is hazardous, expensive, requires monitors, detectors, and specially trained workers. Gas chlorination also requires risk management plans to be prepared periodically. The calcium hypochlorite can be safely stored onsite without the generation of gas. It is also much cheaper than chlorine. Sodium hypochlorite tends to be more expensive than calcium hypochlorite, but is still cheaper than chlorine.

Booster Pump Station

The existing booster pump station consists of five vertical turbine pumps. The impellers are constructed of stainless steel and are in good condition. The pump casings that house the impellers are constructed of cast iron. They were installed in 2008, are corroding due to the high chlorine concentrations in the water, and need to be replaced with stainless steel.

Monitoring

The existing water treatment system does not have turbidity or chlorine residual meters or recorders. The existing water treatment system will be modified to add monitoring equipment for turbidity and chlorine levels to ensure proper disinfection. This equipment is required under the Surface Water Treatment Rule since the wells are considered under direct influence of surface water.

Water Filter

The water treatment system utilizes one Tonka Equipment Co. iron and manganese pressure filter which was installed in 1989. The filter appears in good condition, however, it must be backwashed more often than specified by the manufacturer because of the high solids content of the raw water from the wells. The filter is not able to keep up with the amount of iron and manganese when the north well is operating above 200 gpm. The existing filter is incapable of removing TTHMs. Modification to the filter system is needed. In the least, an additional filter should be added in case the existing one fails. The existing control panel can accommodate an added filter that runs parallel to the existing one and would increase the efficiency of the existing filter.

Statutory Checklist

[24CFR §58.5]

Record the determinations made regarding each listed statute, executive order or regulation. Provide appropriate source documentation. [Note reviews or consultations completed as well as any applicable permits or approvals obtained or required. Note dates of contact or page references]. Provide compliance or consistency documentation. Attach additional material as appropriate. Note conditions, attenuation or mitigation measures required.

Factors	Determination and Compliance Documentation
Historic Preservation [36 CFR 800]	SHPO agrees that no historic properties will be affected by the undertaking. However, additional Section 106 responsibilities under certain circumstances are set forth at 36 CFR Part 800,

	Protection of Historic Properties. These responsibilities specify that if historic properties are found after the agency official has completed the Section 106 process without planning for subsequent discoveries, the agency official shall make reasonable efforts to avoid, minimize, or mitigate adverse effects to such properties (36 CFR §800.13(b)) Documentation: Letter Correspondence from the California State Historic Preservation Office, April 16, 2014. **(Attachment #2)** Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Floodplain Management [24 CFR 55, Executive Order 11988]	The project is located within a 100 year floodplain and the 8 step process was followed. The water treatment plant is currently operational and relocating the facility is financially infeasible. If the improvements are insurable, flood insurance must be obtained. Documentation: FIRM Panel #06025C0300C, dated September 26, 2008. **(Attachment #3)** Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Wetlands Protection [Executive Order 11990]	The project does not involve new construction within a wetland identified by or delineated on maps issued by the U.S. Department of Interior, Fish and Wildlife Service. An oxbow is located on the east side of the project; however, any water discharged from the facility is designed to drain into a partly lined basin. According to Jeff Lamoure, Imperial County Environmental Health Services Director, the intent of the basin is to capture discharged water and naturally filter it through evaporation and percolation. According to Paul Massey, Palo Verde County Water District Plant Operator, approximately 10,000 gallons a day are backwashed into the

	basin. Documentation: U.S. Fish and Wildlife Service "National Wetlands Inventory" Map. **(Attachment #4)** Imperial County Environmental Health Services Department, discussion with Jeff Lamoure, Director, March 24, 2014. Palo Verde County Water District, discussion with Paul Massey, Plant Operator, March 28, 2014. Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Coastal Zone Management Act [Sections 307(c),(d)]	The project is located more than 100 miles inland from the Pacific Ocean and does not involve the placement, erection, or removal of materials within the Coastal Management Zone. Documentation: California Regional Map. (**Attachment #5**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Sole Source Aquifers [40 CFR 149]	The project site is not located within a designated sole source aquifer watershed area per the United State Environmental Protection Agency (EPA) Region 9 Ground Water Office. Documentation: Sole Source Aquifer Map. (**Attachment #6**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Endangered Species Act [50 CFR 402]	The project is located in an area that has been previously disturbed. The project is not likely to affect Federally-listed or proposed threatened and endangered species, or designated or proposed critical habitat.

	Documentation: Correspondence from the United States Fish & Wildlife Service, May 30, 2014. (**Attachment #7**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Wild and Scenic Rivers Act [Sections 7 (b), (c)]	The project is not located within one mile of a listed Wild and Scenic River. Documentation: Wild and Scenic Rivers Map. (**Attachment #8**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Air Quality [Clean Air Act, Sections 176 (c) and (d), and 40 CFR 6, 51, 93]	Imperial County is listed by EPA as of December 5, 2013, under Currently Designated Nonattainment Areas for the following criteria pollutants: • 8-Hr Ozone 1997 – (Moderate) • PM-10-Imperial Valley, CA – (Serious) • PM-2.5 2006 Imperial Co, CA – (Nonattainment) • 8-Hr Ozone 2008 Imperial County, CA – (Marginal) The Imperial County Air Pollution Control District completed a review of the project and determined that expected emissions from proposed repairs/upgrades do not exceed Nox and PM10 thresholds. Therefore, the project conforms to ICAPCD regulations and is found to be *de minimis*. It should be noted that the ICAPCD recommends adherence to Section 7.1 of Imperial County CEQA Air Quality Handbook and to Regulation VIII by submitting a Dust Control Plan and Construction Notification Form within two (2) weeks prior to any earthmoving activity. This project is exempt from Rule 310 requirements: *C. Exemptions* *C.3 Reconstruction of any development project that*

	is damaged or destroyed and is rebuilt to essentially the same use and intensity. Documentation: Letter correspondence from the Imperial County Air Pollution Control District, April 9, 2014. (**Attachment #9**) http://www.co.imperial.ca.us/airpollution/Forms%20&%20Documents/RULEBOOK/RULES/1RULE310%20JAN%202014.pdf Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Farmland Protection Policy Act [7 CFR 658]	The project site does not include prime or unique farmland. Farmland is in the vicinity, but will not be affected under the scope of this project. Documentation: Farmland Map. (**Attachment #10**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Environmental Justice [Executive Order 12898]	The project is suitable for the proposed use. The project will not result in a disproportionately high or adverse human health or environmental impact on a minority population, low-income population, or Indian tribe, because the project is improving the area by providing improvements to the infrastructure system.

HUD Environmental Standards Determination and Compliance Documentation

Noise Abatement and Control [24 CFR 51 B]	The project does not involve development of noise sensitive uses such as housing, manufactured home parks, nursing homes, schools, or hospitals, or raise the level of noise beyond levels allowed for the A-2 Zone (70 decibels) according to Title 9 of the County Ordinance. The project area is outside the compatibility plan for the Imperial County Airport, Calexico Airport, and Naval Air Facility.

	Noise attributed to construction would be temporary (30 days) and would conform to Federal, State, and County Noise Standards. No noise abatement is required per 24 CFR 51 B. Documentation: County of Imperial, Planning & Development Services Department. 1998. *Noise Abatement and Control.* El Centro, CA. (**Attachment #11**) Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Toxic/Hazardous/Radioactive Materials, Contamination, Chemicals or Gases [24 CFR 58.5(i)(2)]	According to the United States Environmental Protection Agency (EPA) Enviromapper for Envirofacts database and Enforcement & History Online database, the project site and adjacent properties are free of hazardous materials, contamination, toxic chemicals, gases, and radioactive substances. The EPA has no record of any toxic releases to land on or adjacent to the project site. Furthermore, the project does not involve new development for habitation. The current water treatment system is out of compliance and the proposed project will upgrade the system in order to make it safer and more effective. Documentation: 2014. Enviromapper for Envirofacts. Accessed June 10. (**Attachment #12**) United States Environmental Protection Agency. 2014. Enforcement & Compliance History Online. Accessed June 10. Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Siting of HUD-Assisted Projects near Hazardous Operations [24 CFR 51 C]	The project site is located in an isolated area and is not located in the immediate vicinity of hazardous industrial operations handling fuel or chemicals of an explosive or flammable nature. Under these circumstances, the project site is located at an

	acceptable separation distance from any specific, stationary hazardous operations that store, handle, or process hazardous substances. Documentation: 2014. Enviromapper for Envirofacts. Accessed June 10. (**Attachment #12**) United States Environmental Protection Agency. 2014. Enforcement & Compliance History Online. Accessed June 10. Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243
Airport Clear Zones and Accident Potential Zones [24 CFR 51 D]	The project is not within an FAA-designated civilian airport Runway Clear Zone (RCZ), or within a military airfield Clear Zone (CZ), or Accident Potential Zone (APZ). Documentation: Imperial County Airport Land Use Compatibility Map **(Attachment #13)** Supporting documentation can be reviewed at I.C. Community & Economic Development, 940 W. Main Street, Suite 203, El Centro, CA 92243

Environmental Assessment Checklist

[Environmental Review Guide HUD CPD 782, 24 CFR 58.40; Ref. 40 CFR 1508.8 &1508.27]

Evaluate the significance of the effects of the proposal on the character, features and resources of the project area. Enter relevant base data and verifiable source documentation to support the finding. Then enter the appropriate impact code from the following list to make a determination of impact. **Impact Codes**: (**1**) - No impact anticipated; (**2**) - Potentially beneficial; (**3**) - Potentially adverse; (**4**) - Requires mitigation; (**5**) - Requires project modification. Note names, dates of contact, telephone numbers and page references. Attach additional material as appropriate. Note conditions or mitigation measures required.

Land Development	**Code**	**Source or Documentation**
Conformance with Comprehensive Plans and Zoning	1	The project site is located approximately one mile south of the unincorporated community of Palo Verde and is subject to the Imperial County General Plan and Title 9 of the Municipal Code. The project site is zoned by the Imperial County

		Land Use Ordinance as A-2 (general agriculture), which allows for water treatment plants. The Palo Verde County Water Treatment Plant is pre-existing and no change in land use will occur. Therefore, the proposed project conforms to the County General Plan and is consistent with the zoning for the site. Documentation: County of Imperial, Planning & Development Services Department. 2008. *Land Use Element of the Imperial County General Plan.* El Centro, CA. County of Imperial. 1998. Title 9 of the Municipal Code.
Compatibility and Urban Impact	1	The proposed project will replace the existing water tanks and rehabilitate the water treatment system to correct environmental health violations. No change in land use will occur and the water treatment plant is a public facility designed to supply residents of the community of Palo Verde with potable water. Therefore, the project is compatible with the surrounding land uses and will not adversely affect, or be adversely affected by land use or urban compatibility issues. Documentation: County of Imperial, Planning & Development Services Department. 2008. *Land Use Element of the Imperial County General Plan.* El Centro, CA
Slope	1	The topography of the project site and surrounding area is substantially flat with very minor slope increases. The project site is not in an area of the county identified as having potential landslide activity. No impact is anticipated related to slope. Documentation: County of Imperial, Planning/Building Department. 1993. Imperial County General Plan. *Seismic and Public Safety Element.* (**Attachment #14**)

Erosion	1	The project site is located in an area of Imperial County that is generally flat and experiences low levels of natural erosion. The project site is not within an area of potential landslides. Documentation: County of Imperial, Planning/Building Department. 1993. Imperial County General Plan. *Seismic and Public Safety Element.* (**Attachment #14**)
Soil Suitability	1	Soils around the project site are classified by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) as meloland fine sandy loam. The USDA indicates that development on meloland fine sandy loam soils is very limited. However, as referenced earlier, the project site itself has been previously disturbed and developed with the existing water treatment system. Additionally, the project will be required to obtain all the necessary permits and conform to Title 24 (California Building Code). Compliance with code regulations ensures the adequate design and construction of building foundations to resist potential soil movement. Documentation: United States Department of Agriculture, Natural Resources Conservation Service. 2014. Web Soil Survey. Accessed June 24. *http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx*
Hazards and Nuisances including Site Safety	1	The project site is not located within and does not cross a known Alquist-Priolo Earthquake Fault Zone. For this reason, the risk of surface fault rupture on the project site is considered low. However, Imperial County is located in seismically active Southern California. Due to the proximity of the San Andreas, San Jacinto-Coyote Creek, and Elsinore-Laguna Salada faults, the project site could experience ground

		shaking resulting from a nearby earthquake. As referenced above, the project site will be required to comply with the California Building Code, which requires structures to be built to withstand ground shaking in areas of high earthquake hazards. Compliance with the code will ensure that seismic hazards will not adversely affect the proposed project. <u>Documentation:</u> County of Imperial, Planning/Building Department. 1993. Imperial County General Plan. *Seismic and Public Safety Element.* **(Attachment #14)**
Energy Consumption	2	The proposed project will be constructed in compliance with the 2010 California Green Building Standards Code (CCR Title 24, Part 11), also known as CALGreen, which includes mandatory requirements intended to reduce construction waste, make buildings more efficient in the use of materials and energy, and reduce environmental impact during and after construction. Compliance with CALGreen will ensure that the project will not result in inefficient or wasteful use of energy resources and will not have an adverse effect in relation to energy consumption. Additionally, the proposed project will upgrade the system to make it safer and more efficient, which will lead to a beneficial impact. <u>Documentation:</u> California Building Standards Commission. 2012. Guide to the (Non-Residential) *California Green Building Standards Code.*

Noise - Contribution to Community Noise Levels	1	The project does not involve development of noise sensitive uses such as housing, manufactured home parks, nursing homes, schools, or hospitals, or raise the level of noise beyond levels allowed for the A-2 Zone (70 decibels) according to Title 9 of the County Ordinance.

		The proposed project is located in an isolated, rural portion of Imperial County and consists of construction related activities for a water treatment system. Due to the remote location, noise levels from temporary construction will not have an adverse effect on the environment. <u>Documentation:</u> County of Imperial, Planning & Development Services Department. 1998. *Noise Abatement and Control.* El Centro, CA. (**Attachment #11**)
Air Quality Effects of Ambient Air Quality on Project and Contribution to Community Pollution Levels	1	Imperial County is listed by EPA as of December 5, 2013, under Currently Designated Nonattainment Areas for the following criteria pollutants: • 8-Hr Ozone 1997 – (Moderate) • PM-10-Imperial Valley, CA – (Serious) • PM-2.5 2006 Imperial Co, CA – (Nonattainment) • 8-Hr Ozone 2008 Imperial County, CA – (Marginal) The Imperial County Air Pollution Control District completed a review of the project and determined that expected emissions from proposed repairs/upgrades do not exceed Nox and PM10 thresholds. Therefore, the project conforms to ICAPCD regulations and is found to be *de minimis.* It should be noted that the ICAPCD recommends adherence to Section 7.1 of Imperial County CEQA Air Quality Handbook and to Regulation VIII by submitting a Dust Control Plan and Construction Notification Form within two (2) weeks prior to any earthmoving activity. This project is exempt from Rule 310 requirements: *C. Exemptions* *C.3 Reconstruction of any development project that is damaged or destroyed and is rebuilt to essentially the same use and intensity.*

		Documentation: Letter correspondence from the Imperial County Air Pollution Control District, April 9, 2014. **(Attachment #9)** http://www.co.imperial.ca.us/airpollution/Forms%20&%20Documents/RULEBOOK/RULES/1RULE310%20JAN%202014.pdf
Environmental Design Visual Quality - Coherence, Diversity, Compatible Use and Scale	1	The project will provide essential potable water services to the unincorporated community of Palo Verde. The purpose of the project is to protect the health and safety of the residents of Palo Verde by correcting violations with the current water treatment system. The design of the project is expected to be similar to the existing facility and therefore will not have a visually negative impact on the environment.

Socioeconomic	**Code**	**Source or Documentation**
Demographic Character Changes	1	The proposed project will replace the existing water tanks and rehabilitate the water treatment system to correct environmental health violations. The project will not introduce any barriers that would isolate a particular neighborhood or population group or result in any changes to the demographic character of Palo Verde.
Displacement	1	The project site is very rural and located approximately one mile from the townsite of Palo Verde. No homes or businesses will be displaced as a result of implementation of the project.
Employment and Income Patterns	1	The proposed project will protect the health and safety of residents and correct violations with the current water treatment system. The project will not increase population or create new jobs. Therefore, the proposed project will not affect employment or income patterns in the surrounding areas.

Community Facilities and Services	**Code**	**Source or Documentation**
Educational Facilities	1	The proposed project will not result in a change in land use or increase in population. Therefore, the project will not generate additional students to

		be absorbed by these local school districts and thus will not impact educational facilities.
Commercial Facilities	1	The proposed project will not result in a change in land use or increase in population. Therefore, the project will not adversely impact commercial facilities.
Health Care	1	The proposed project will not result in a change in land use or increase in population. Therefore, the project will not adversely impact health care facilities.
Social Services	1	The Imperial County Department of Social Services provides basic subsistence and protection to needy and disadvantaged county residents. The Department of Social Services is supported by federal, state, and local funding. Since the proposed project will not result in a change in land use or an increase in population, the project will not adversely impact the provision of social services in the county.
Solid Waste	1	The water treatment plant is pre-existing and the proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect solid waste.
Waste Water	1	The proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect wastewater.
Storm Water	1	The proposed project will only replace what is existing and will not adversely affect storm water.
Water Supply	2	The proposed project will correct violations and make the water treatment system for Palo Verde more efficient. The project will benefit the Palo Verde water supply.
Public Safety - Police	1	Law enforcement services are provided to Palo Verde by the Imperial County Sheriff's Department. The proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect police services.
- Fire	2	The Imperial County Fire Department provides fire protection services to Palo Verde and the surrounding areas. The townsite of Palo Verde has two 125,000 gallon storage tanks, but only one is usable. The fire code requires 180,000 gallons storage, which means Palo Verde is out of compliance and at risk in case of a fire. The proposed project would add another 125,000

		gallon storage tank to bring the townsite back into compliance. The fire storage calculation is as follows: 1500 gallons per minute are required for up to two hours. 1,500 gallons x 120 minutes = 180,000 gallons. Documentation: 2010 California Fire Code, Title 24, Part 9, Appendix B, Section B105. http://publicecodes.cyberregs.com/st/ca/st/b300v10/st_ca_st_b300v10_appb_sec005.htm
- Emergency Medical	1	The proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect emergency medical services.
Open Space and Recreation - Open Space	1	The proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect open space.
- Recreation	1	The proposed project will not result in a change in land use or an increase in population. Therefore, the project will not adversely affect emergency recreational opportunities.
- Cultural Facilities	1	As discussed under the Historic Properties section, SHPO agrees that no historic properties will be affected by the undertaking. *HP Fact Sheet #6, Guidance on Archeological Investigations in HUD Projects* (revised June 2012), states that factors to consider in deciding to undertake archeological field investigation include whether or not sources corroborate the likelihood of historic properties in the APE and if the ground has already been disturbed through previous construction or use. The Imperial County General Plan identifies that the project area has little to no potential for cultural resources due to extensive past and present agricultural activity. Additionally, there are no recorded cultural facilities and no information indicative of National Register-eligible or –listed

		resources on or in the vicinity of the project site. Furthermore, the project site has been previously developed, including extensive ground disturbance/grading. Ground disturbance associated with the proposed project would not exceed the depth of previous ground disturbance on the project site. For these reasons, no archaeological field investigations were completed for this project. Mitigation measures CF-1 and CF-2 as required by this assessment will ensure that if any currently unknown cultural resources or facilities are uncovered during construction activities all work will be halted and a professional archaeologist or paleontologist will be retained to determine the significance of the discovery and any actions necessary to protect the discovery. Therefore, the project will not impact any cultural resources or facilities. <u>Documentation:</u> Letter Correspondence from the California State Historic Preservation Office, April 16, 2014 **(Attachment #2)** United States Department of Housing and Urban Development, Office of Community Planning and Development. 2012. HP Fact Sheet #6, Guidance on Archeological Investigations in HUD Projects.
Transportation	1	The proposed project will not result in a change in land use or an increase in population, the project will not increase automobile traffic or adversely affect transportation in Heber.

Natural Features		**Source or Documentation**
Water Resources	1	The proposed project captures groundwater through two water wells. Each well has a maximum capacity of 400 gallons per minute and a depth of 70 and 90 feet. Raw water from the wells is pumped simultaneously through an 8-inch pipeline into the chlorination system to receive pre-chlorination. Water flows to the san

		filter system for treatment, and then is chlorinated for disinfection. The filters are backwashed for four minutes every eight hours of operation. Backwash water is pumped to the holding pond for evaporation. However, the two existing wells are starting to have pressure issues due to wear and tear. The proposed project will address these problems. Documentation: Engineering Report for Palo Verde Water District **(Attachment #15)**
Surface Water	1	The proposed project is located on previously disturbed land and will be retained for the same use. The proposed project would not impair the storm water retention or runoff. There are no impacts to surface water.
Unique Natural Features and Agricultural Lands	1	The project site does not include farmland or unique features. Farmland is in the vicinity, but will not be affected under the scope of this project. Documentation: Farmland Map **(Attachment #10)**
Vegetation and Wildlife	1	Vegetation and wildlife is not expected to be affected. The project is located in an area that has been previously disturbed. The project is not likely to affect Federally-listed or proposed threatened and endangered species, or designated or proposed critical habitat. Documentation: Correspondence from the United States Fish & Wildlife Service, May 30, 2014. (**Attachment #7**)

Other Factors		**Source or Documentation**
Flood Disaster Protection Act [Flood Insurance]	1	The project is located within a 100 year floodplain and the 8 step process was followed. The water treatment plant is currently operational and

[§58.6(a)]		relocating the facility is financially infeasible. If the improvements are insurable, flood insurance must be obtained. Documentation: FIRM Panel #06025C0300C, dated September 26, 2008. **(Attachment #3)**
Coastal Barrier Resources Act/ Coastal Barrier Improvement Act [§58.6(c)]	1	The project is located more than 100 miles inland from the Pacific Ocean and does not involve the placement, erection, or removal of materials within the Coastal Management Zone. Documentation: Project Regional Map. **(Attachment #5)**
Airport Runway Clear Zone or Clear Zone Disclosure [§58.6(d)]	1	The project is not within an FAA-designated civilian airport Runway Clear Zone (RCZ), or within a military airfield Clear Zone (CZ), or Accident Potential Zone (APZ). Documentation: Imperial County Airport Land Use Compatibility Map. **(Attachment #13)**
Other Factors	1	No other factors were identified.

Summary of Findings and Conclusions

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives and Project Modifications Considered [24 CFR 58.40(e), Ref. 40 CFR 1508.9]
(Identify other reasonable courses of action that were considered and not selected, such as other sites, design modifications, or other uses of the subject site. Describe the benefits and adverse impacts to the human environment of each alternative and the reasons for rejecting it.)

The project is not a new construction project or a project for habitation, but rather improvements to an existing water facility constructed in 1983. An alternative project site would mean relocating the entire water tank storage area as well as existing infrastructure. Palo Verde County Water District does not have the budget to acquire land or relocate the existing compound. Any alternative that involves moving the project site would make the project economically infeasible. Additionally, it would still need to be located in the flood zone as the entire around around the Colorado River

No Action Alternative [24 CFR 58.40(e)]
(Discuss the benefits and adverse impacts to the human environment of not implementing the preferred alternative).

As outlined in the project description, the Palo Verde County Water District is in violation with multiple agencies. There is not a sufficient supply of water to meet both the drinking water needs and required capacity under the fire code. This is causing a threat to the health and safety of residents of Palo Verde. If no action is taken, the existence of the community will be put at risk.

Mitigation Measures Recommended [24 CFR 58.40(d), 40 CFR 1508.20]
(Recommend feasible ways in which the proposal or its external factors should be modified in order to minimize adverse environmental impacts and restore or enhance environmental quality.)

Noise

MM N-1 Construction noise from a single piece of equipment, or a combination of equipment, shall not exceed 70 dB L_{eq} when averaged over an 8-hour period and measured at the nearest sensitive receptor.

MM N-2 Construction equipment operation is limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No construction shall take place on Sundays.

Cultural Facilities

CF-1 In the event that archaeological/paleontological resources are discovered during demolition or construction activities, all grading and construction work on the project site shall be suspended until the significance of the features can be determined by a qualified archaeologist/paleontologist meeting the Secretary of the Interior's Professional Qualifications Standards. Identified cultural resources should be recorded on DPR 523 (A-J) historic resource recordation forms. Prehistoric resources include chert or obsidian flakes, projectile points, and other flaked-stone artifacts; mortars, grinding sticks, pestles, and other groundstone tools; and dark friable soil containing shell and bone dietary debris, heat-affected rock, or human burials. Historic resources include stone or adobe foundations or walls; structures and remains with square nails; mine shafts, tailings, or ditches; and refuse deposits or bottle dumps, often located in old wells or privies. The qualified archaeologist/paleontologist shall make recommendations for measures necessary to protect any unique archaeological or paleontological resource or shall undertake data recover, excavation, analysis, and curation of archaeological/paleontologist materials. County staff will consider such recommendations and implement them where they are feasible in light of project design as previously approved by the County.

CF-2 If human remains are discovered, all work shall be halted immediately and the County Coroner must be notified, according to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code. If the remains are determined to be Native

American, the Coroner will notify the Native American Heritage Commission, and the procedures outlined in the CEQA Guidelines of Title 14 of the California Code of Regulations, Section 15064.5(d).

Additional Studies Performed
(Attach studies or summaries)

List of Sources, Agencies and Persons Consulted [40 CFR 1508.9(b)]

Baird, Tera. 2014. Biologist, United States Fish & Wildlife Service. Personal communication (email). May 30.

California Building Standards Commission. 2012. *Guide to the (Non-Residential) California Green Building Standards Code*.

California Coastal Commission. 2014. Accessed May 30. http://www.coastal.ca.gov/perresp.html.

California Department of Conservation. 2012. *Imperial County Important Farmland 2010*. Sacramento.

———. 2013. California Important Farmland Finder. Accessed June 4. http://maps.conservation.ca.gov/ciff/ciff.html.

California Department of Conservation, California Geological Survey. 2014. Accessed June 25. http://www.conservation.ca.gov/cgs/rghm/ap/Pages/Index.aspx.

California Office of Statewide Health Planning & Development. 2014. Accessed June 30. http://gis.oshpd.ca.gov/atlas/.

California Stormwater Quality Association. 2014. Accessed July 3. http://www.cabmphandbooks.com/.

Cedillo, Linda. 2014. APC Environmental Coordinator, Imperial County Air Pollution Control District. Personal communication (letter). April 9.

Lamoure, Jeff. 2014. Director, Imperial County Environmental Health Department. Personal Communication (in person). March 24 & August 7.

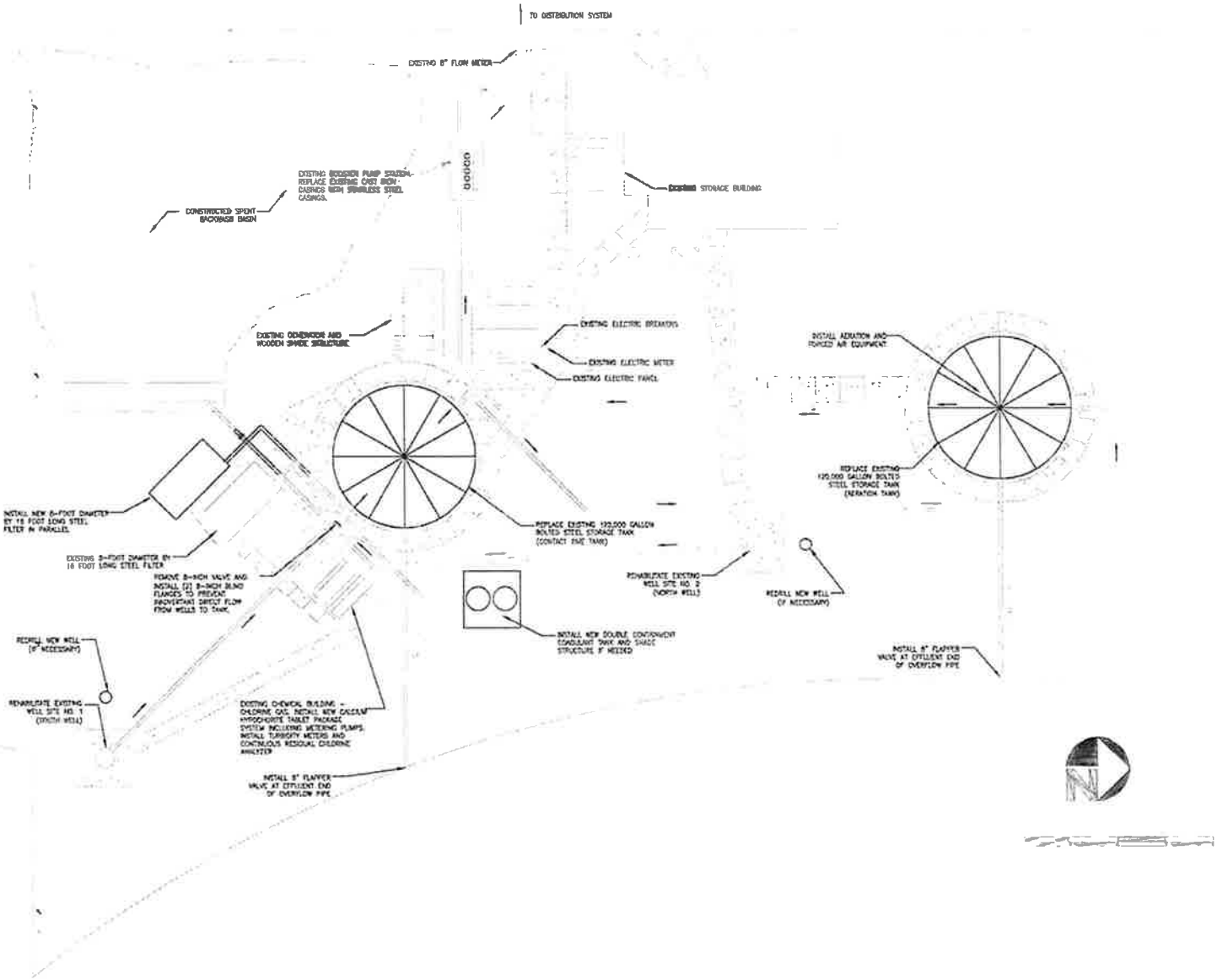
County of Imperial, Planning/Building Department. 1993. *Imperial County General Plan*. El Centro, CA.

———.1998. Title 9 of the Municipal Code.

County of Imperial, Planning & Development Services Department. 2008. *Land Use Element of the Imperial County General Plan*. El Centro, CA.

Attachment 1

Water Plant Site Layout-Model


TO DISTRIBUTION SYSTEM
EXISTING 8" FLOW METER
EXISTING STORAGE BUILDING
CONSTRUCTED SPENT BACKWASH BASIN
EXISTING ELECTRIC BREAKERS
EXISTING ELECTRIC METER
EXISTING ELECTRIC PANEL
INSTALL AERATION AND FORCED AIR EQUIPMENT
REPLACE EXISTING 120,000 GALLON BOLTED STEEL STORAGE TANK (AERATION TANK)
INSTALL NEW 8-FOOT DIAMETER BY 16 FOOT LONG STEEL FILTER IN PARALLEL
EXISTING 8-FOOT DIAMETER BY 16 FOOT LONG STEEL FILTER
REMOVE 8-INCH VALVE AND INSTALL (2) 8-INCH BLIND FLANGES TO PREVENT PROVIDING DIRECT FLOW FROM WELLS TO TANK.
REPLACE EXISTING 120,000 GALLON BOLTED STEEL STORAGE TANK (CONTACT TIME TANK)
REHABILITATE EXISTING WELL SITE NO. 2 (NORTH WELL)
REDRILL NEW WELL (IF NECESSARY)
INSTALL NEW DOUBLE CONTAINMENT CHEMICAL TANK AND SHADE STRUCTURE IF NEEDED
INSTALL 8" FLAPPER VALVE AT EFFLUENT END OF OVERFLOW PIPE
REDRILL NEW WELL (IF NECESSARY)
REHABILITATE EXISTING WELL SITE NO. 1 (SOUTH WELL)
EXISTING CHEMICAL BUILDING - CHLORINE GAS. INSTALL NEW CALCIUM HYPOCHLORITE TABLET PACKAGE SYSTEM INCLUDING METERING PUMPS. INSTALL TURBIDITY METERS AND CONTINUOUS RESIDUAL CHLORINE ANALYZER
INSTALL 8" FLAPPER VALVE AT EFFLUENT END OF OVERFLOW PIPE

Attachment 2

04-16-14 SHPO Letter Palo Verde Improvements

STATE OF CALIFORNIA – THE NATURAL RESOURCES AGENCY
EDMUND G. BROWN, JR., *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

April 16, 2014

Reply to HUD 2014_0321_004

Esperanza M. Colio
Community & Economic Development Manager
Imperial County
940 West Main Street, Suite 203
El Centro, California 92243

Dear Ms. Colio:

Re: County Water District Treatment Plant Project Located at Palo Verde

Thank you for forwarding the above referenced undertaking to my office for review and comment pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations found at 36 CFR Part 800. The regulations and advisory material can be found at www.achp.gov.

Pursuant to 36 CFR §800.4(d) I do not object to your determination that no historic properties will be affected by the undertaking. However, your agency may have additional Section 106 responsibilities under certain circumstances set forth at 36 CFR Part 800. For example, in the event that cultural or historical resources are discovered during implementation of the undertaking your agency is required to consult further pursuant to §800.13(b).

Your consideration of historic properties in the project planning process is appreciated. If you have questions please contact Shannon Lauchner, Historian II, with the Local Government Unit at (916)445-7013 or by email at Shannon.lauchner@parks.ca.gov

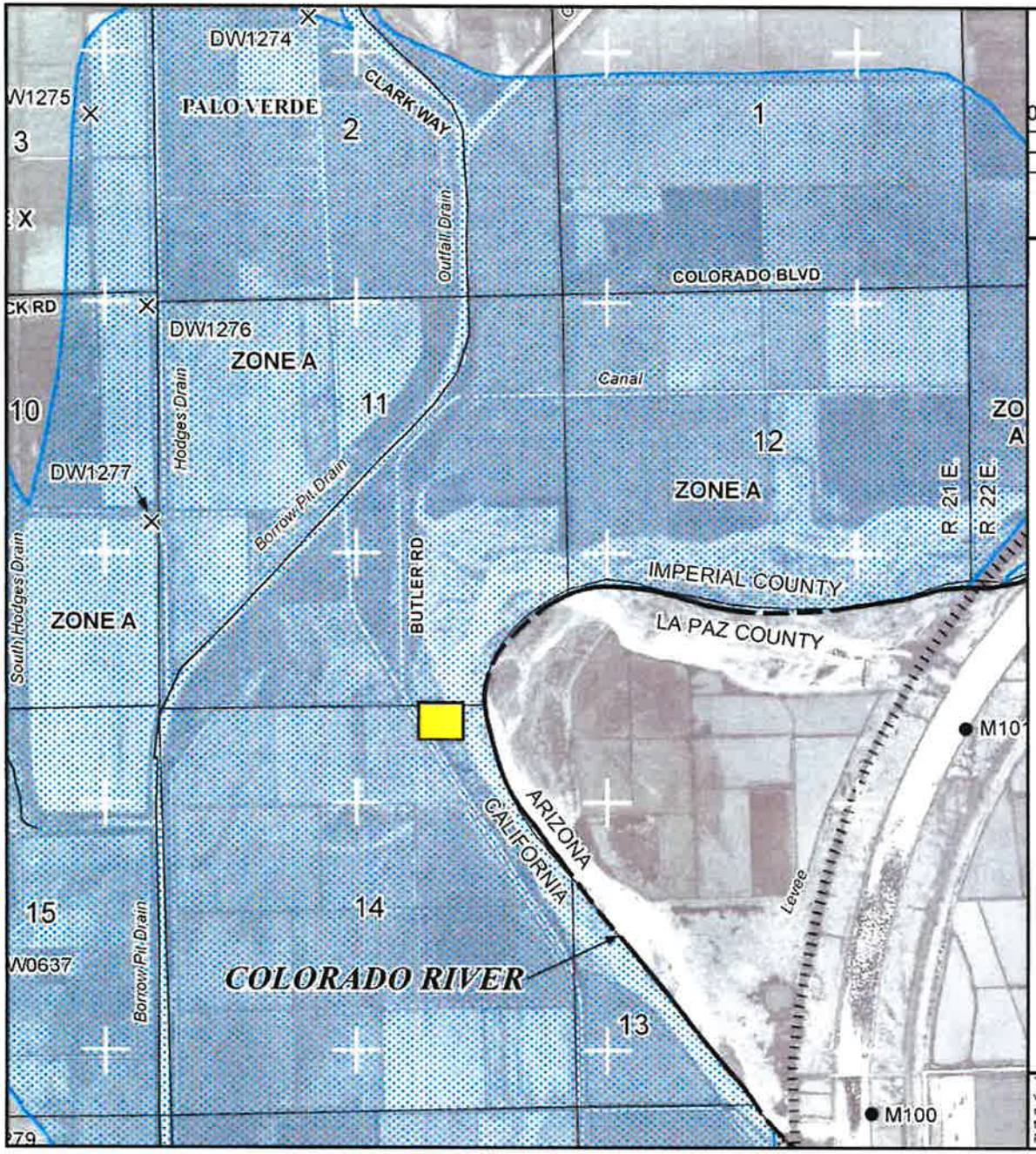
Sincerely,

Lucinda Woodward for

Carol Roland-Nawi, Ph.D.
State Historic Preservation Officer

Attachment 3

Palo Verde FIRM (Project Location)



MAP SCALE 1" = 2000'

00 0 2000 4000 FEET METE

PROJECT LOCATION

NFIP

PANEL 0300C

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

IMPERIAL COUNTY, CALIFORNIA

AND INCORPORATED AREAS

PANEL 300 OF 2300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
IMPERIAL COUNTY UNINCORPORATED AREAS	060085	0300	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject

MAP NUMBER
06025C0300C

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Attachment 4

Palo Verde Wetlands Map

ATTACHMENT 4

U.S. Fish and Wildlife Service

National Wetlands Inventory

Palo Verde Water Improvements

Aug 6, 2013

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:

Attachment 5

California Site Map - Palo Verde

ATTACHMENT 5

CALIFORNIA SITE MAP

★ **PALO VERDE, CA**

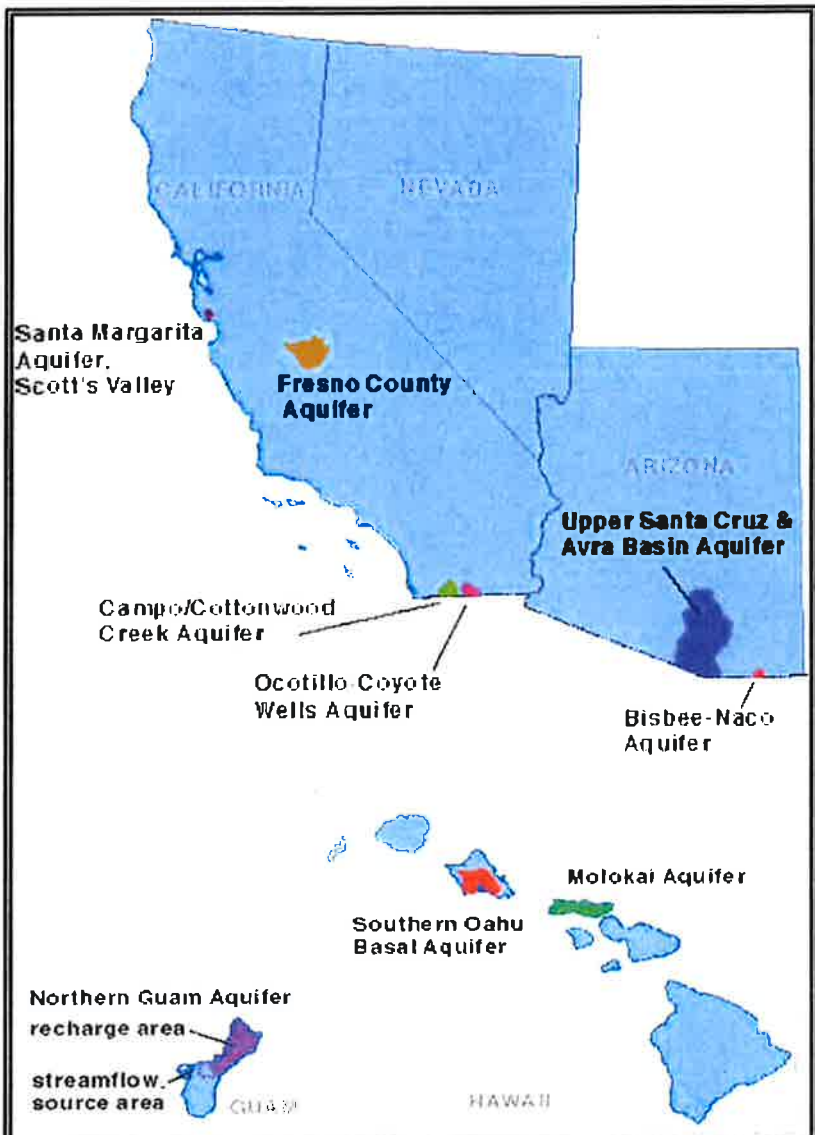
Attachment 6

Sole Source Aquifer Map

ATTACHMENT 6

Designated Sole Source Aquifers in EPA Region IX

Arizona, California, Hawaii, Nevada, Guam, and American Samoa



Hillary Hecht
EPA Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
phone: (415) 972-3530
e-mail: hecht.hillary@epa.gov

The 9 designated Sole source aquifers in Region IX are listed below. Contact the coordinator above for more information.

DESIGNATED SOLE SOURCE AQUIFERS IN REGION IX:

State	Sole Source Aquifer Name	Federal Reg. Cit.	Publ. Date	GIS map
AZ	Upper Santa Cruz & Avra Basin Aquifer	49 FR 2948	01/24/84	yes (PDF)
AZ	Bisbee-Naco Aquifer	53 FR 38337	09/30/88	yes (PDF)
CA	Fresno County Aquifer	44 FR 52751	09/10/79	yes (PDF)
CA	Santa Margarita Aquifer, Scotts Valley	50 FR 2023	01/14/85	yes (PDF)
CA	Campo/Cottonwood Creek	58 FR 31024	05/28/93	yes (PDF)
CA	Ocotillo-Coyote Wells Aquifer	61 FR 47752	09/10/96	yes (PDF)
GU	Northern Guam Aquifer System	43 FR 17867	04/26/78	yes (PDF)
HI	Southern Oahu Basal Aquifer	52 FR 45496	11/30/87	yes (PDF)

Attachment 7

Fish & Wildlife Service

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, California 92262

In Reply Refer To:
FWS-IMP-13B0400-13TA0402

SEP 2 4 2013

Ms. Esperanza M. Colio
Manager
Imperial County Community & Economic Development
940 West Main Street, Suite 203
El Centro, California 92243-2875

Subject: Endangered Species Act Review for Repairs to the Palo Verde Water System, Imperial County, California

Dear Ms. Colio:

We received your letter of August 7, 2013, describing the project named above and requesting our review and comments on jurisdictional trust resources of the U.S. Fish and Wildlife Service. Imperial County Community & Economic Development (County) proposes to carry out multiple repairs to the municipal drinking water system servicing the unincorporated community of Palo Verde, California, in the lower Colorado River Valley. The anticipated repairs include installation of a new steel cone roof, ladder, locking roof hatch, and internal structure; recoating and lining of the south storage tank to prevent contamination of the water supply; disinfection of the two existing steel water tanks; and the installation of miscellaneous hardware and appurtenances supporting the aforementioned structures.

The project site is located adjacent to a lagoon which is occupied by the federally endangered Yuma clapper rail (*Rallus longirostris yumanensis*) and potentially occupied by the federally endangered razorback sucker (*Xyrauchen texanus*). The site is flanked by an open woodland to the southeast, and a denser woodland to the northwest; these woodlands are likely used as stopover foraging habitat by the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*); State endangered subspecies of willow flycatcher (*E. t. brewsteri* and *E. t. adastus*); State endangered Arizona Bell's vireo (*Vireo bellii arizonae*) and the yellow-billed cuckoo (*Coccyzus americanus*; candidate for Federal listing), during each species' spring and fall migration periods. No designated or proposed critical habitat occurs in the vicinity.

Based on the description of the work involved, we do not believe that the project will adversely affect federally listed threatened and endangered species, since no removal of vegetation is anticipated as part of the project, nor does the work involve disturbance or change to the waters of the adjacent lagoon. To minimize any potential effects from nighttime lighting on threatened or endangered birds roosting or migrating in the vicinity, we recommend that outdoor lighting at the plant site be directed downward and away from the lagoon and the two woodland areas.

If the County would like to improve the habitat quality for declining riparian birds at the project site or in the vicinity of the lake, the County could replace the common nonnative tamarisk trees (*Tamarix*) with the following tree and shrub species: mesquite (*Prosopis glandulosa, Prosopis velutina*), Goodding's willow (*Salix gooddingii*), cottonwood (*Populus fremontii*), netleaf hackberry (*Celtis reticulata, Celtis laevigata*), velvet ash (*Fraxinus velutina*), native palms (*Washingtonia filifera, Brahea armata*), soapberry (*Sapindus saponaria* var. *drummondii*), seep-willow (*Baccharis salicifolia*), and desert broom (*Baccharis sergiloides*). However, this is merely a suggestion for your consideration, not a requirement; any such action on the part of the County would be a voluntary action to improve the local environment.

We appreciate the opportunity to work with you to address the needs of federally listed and candidate species in your planning efforts. If you have any questions regarding this correspondence, please contact James Thiede of this office at 760-322-2070, extension 219.

Sincerely,

for

Kennon A. Corey
Assistant Field Supervisor

From: Baird, Tera
To: Joshua Menvielle
Cc: Esperanza Colio
Subject: 08ECAR00-2014-TA-0369 Palo Verde Municipal Water System Tank Replacement/Improvements
Date: Friday, May 30, 2014 2:35:45 PM

Thanks Josh - my main concern would be the disturbance of rails during breeding season. The threshold for noise disturbance that results in behavioral disturbance or abandonment of a breeding area is unknown and some areas with significant noise sources will maintain healthy rail populations.

Based on our discussion and the revised project description, it is likely that any noise from construction equipment (concrete mixer, equipment to install and remove tanks) will be brief and intermittent in duration. Given the construction dates and best case scenario, it is possible the heavy machinery used on this project may miss breeding window (Mar-July) in entirety. Thanks for consulting with us on the project change. I don't see any issues with the proposed changes outlined in you letter dated March 18, 2014, that will adversely affect federally listed threatened and endangered species.

Thanks for your patience while we switched staff over to cover projects in Imperial. I'll save this email in pdf. form to our files and you may reference, 08ECAR00-2014-TA-0369 Palo Verde Municipal Water System Tank Replacement.

Tera Keeler Baird
Biologist
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, California 92262
(760) 322-2070 extension 217

On Fri, May 23, 2014 at 2:39 PM, Joshua Menvielle <JoshuaMenvielle@co.imperial.ca.us> wrote:

> Hi Tera,
>
> You are correct, the vegetation within and adjacent to the lagoon will not be affected. The work will only take place on previously disturbed land where the existing tanks are located. The project does not involve disturbance or changes to the waters of the lagoon. I will put language into the assessment that all work equipment will be in the parking area within the existing project footprint.
>
> We don't have a set start date at this point. However, the project must be completed by September 2015, so we anticipate starting construction sometime between November 2014-May 2015.

Let me know if this helps, or if you have any other questions.

Thanks,

Josh Menvielle

Economic Development Coordinator

Imperial County Community & Economic Development

940 W. Main Street, Suite 203

El Centro, CA 92243

Tel: (760) 482-4982

Fax: (760) 337-8907

joshuamenvielle@co.imperial.ca.us

From: Baird, Tera [mailto:tera_baird@fws.gov]
Sent: Friday, May 23, 2014 2:24 PM
To: Joshua Menvielle
Cc: Felicia Sirchia; Sorensen, Pete

Subject: Re: NEPA Review for Palo Verde Water System Improvements

Joshua -

Nice talking to you this week. Just to confirm, the most significant change in the project is the replacement of the existing water tanks (rather than rehabilitation) and the upgrading of the concrete pads where the tanks will be bolted. The project will not include removal of any vegetation within or adjacent the lagoon which is occupied by the federally endangered Yuma clapper rail and potentially occupied by the federally endangered razorback sucker. The revised project does not involve disturbance or change to the waters of the adjacent

lagoon.

The staging area for all work equipment will be in parking area within the existing project footprint. Could you clarify when the work will happen?

Thanks!

Tera Keeler Baird

Biologist

777 East Tahquitz Canyon Way, Suite 208

Palm Springs, California 92262

(760) 322-2070 extension 217

On Tue, May 13, 2014 at 8:47 AM, Sorensen, Pete <pete_sorensen@fws.gov> wrote:

---------- Forwarded message ----------
From: **Joshua Menvielle** <JoshuaMenvielle@co.imperial.ca.us>

Date: Tue, May 13, 2014 at 8:40 AM
Subject: RE: NEPA Review for Palo Verde Water System Improvements

To: "McBride, Jenness" <jenness_mcbride@fws.gov>
Cc: Esperanza Colio <EsperanzaColio@co.imperial.ca.us>, Jade Padilla <JadePadilla@co.imperial.ca.us>, Pete Sorensen <pete_sorensen@fws.gov>

Thank you Jenness, I'm glad you are doing better.

Peter,

I have attached a copy of the initial letter we sent, as well as a shapefile of the project site. I am

also attaching a copy of the initial response letter we received from Jim Thiede. We are sending a new letter because the project scope was changed from rehab to replacement. We have completed most of the environmental review and are only waiting on a response from the US Fish & Wildlife Service.

Please feel free to let me know if you have any questions.

Thanks,

Josh Menvielle

Economic Development Coordinator

Imperial County Community & Economic Development

940 W. Main Street, Suite 203

El Centro, CA 92243

Tel: (760) 482-4982

Fax: (760) 337-8907

joshuamenvielle@co.imperial.ca.us

From: McBride, Jenness [mailto:jenness_mcbride@fws.gov]
Sent: Tuesday, May 13, 2014 8:32 AM
To: Joshua Menvielle
Cc: Esperanza Colio; Jade Padilla; Pete Sorensen

Subject: Re: NEPA Review for Palo Verde Water System Improvements

Hi Josh,

I apologize, I was ill for a couple of weeks in late March and early April, and when I got back to the office, I had a pile of paperwork to catch up on. Obviously some

projects were overlooked. Since then, due to loss of staff and continuing heavy workloads, we have reorganized our office, and Jim Thiede's projects are now managed by Pete Sorensen. I'm copying Pete on this email so he can re-assign your project to another biologist on his staff. Best regards,

Jenness

Jenness McBride

Chief, Coachella and Imperial Valleys Division

U.S. Fish and Wildlife Service

Palm Springs Fish and Wildlife Office

777 East Tahquitz Canyon Way, Suite 208

Palm Springs, California 92262

760-322-2070, ext. 203

---------- Forwarded message ----------
From: **Joshua Menvielle** <JoshuaMenvielle@co.imperial.ca.us>
Date: Tue, May 13, 2014 at 8:09 AM
Subject: RE: NEPA Review for Palo Verde Water System Improvements
To: "jenness_mcbride@fws.gov" <jenness_mcbride@fws.gov>
Cc: Esperanza Colio <EsperanzaColio@co.imperial.ca.us>, Jade Padilla <JadePadilla@co.imperial.ca.us>

Hi Jeness,

I am sending this email as a reminder of our request for information about endangered species near a project site in Palo Verde.

Feel free to let me know if you have any questions.

Thank you,

Josh Menvielle

Economic Development Coordinator

Imperial County Community & Economic Development

940 W. Main Street, Suite 203

El Centro, CA 92243

Tel: (760) 482-4982

Fax: (760) 337-8907

joshuamenvielle@co.imperial.ca.us

From: Joshua Menvielle
Sent: Monday, March 24, 2014 1:18 PM
To: 'jenness_mcbride@fws.gov'
Cc: Esperanza Colio; Jade Padilla
Subject: NEPA Review for Palo Verde Water System Improvements

Hi Jeness,

Based on our phone conversation, please see the attached letter regarding improvements to the Palo Verde water system that we originally mailed to Jim Thiede in your office. As he is no longer working for your department, if you could assist us with this request that would be great.

This is a project we previously consulted with your agency and a letter was sent to us on September 24, 2013 (letter attached for your reference). The project scope has been modified due to additional deficiencies in the Palo Verde water system. Under these circumstances, the County is conducting a new environmental review for the project.

The letter specifically addresses impacts to threatened/endangered species, however, another issue has since come up in regards to wetlands. The instructions for an Environmental Assessment refer to wetland maps issued by the U.S. Department of Interior, Fish and Wildlife Service. Nothing will be discharged into US waterways from the project, but there are wetlands in the vicinity of the project. Would your department be able to make the determination that the wetlands are not affected, or do we need to contact another agency?

I am attaching the shape file of the project area. Please feel free to let me know if you have any questions.

Thank you,

Josh Menvielle

Economic Development Coordinator

Imperial County Community & Economic Development

940 W. Main Street, Suite 203

El Centro, CA 92243

Tel: (760) 482-4982

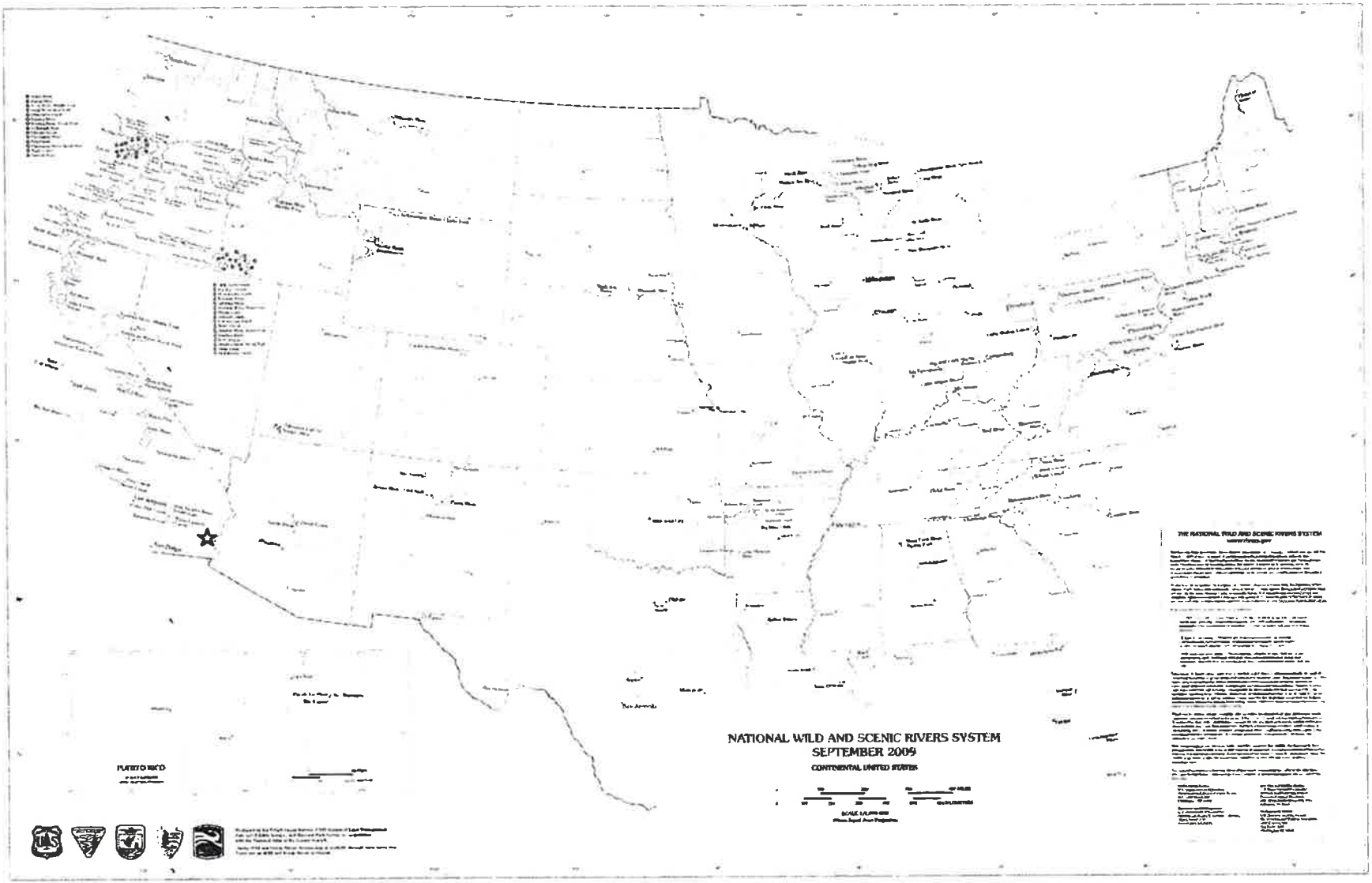
Fax: (760) 337-8907

joshuamenvielle@co.imperial.ca.us

Attachment 8

National Wild & Scenic Rivers - California

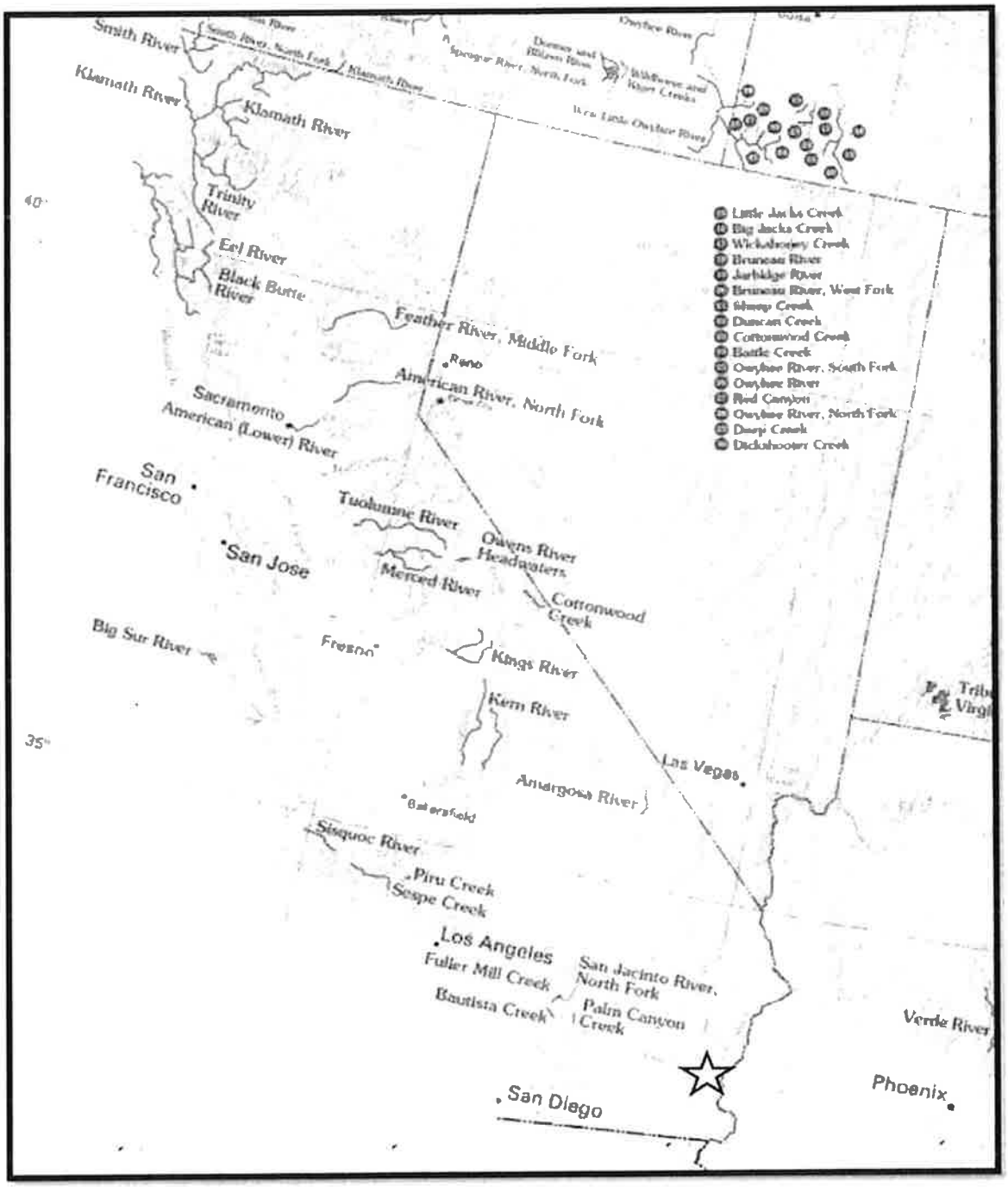
ATTACHMENT 8



☆ **PALO VERDE, CA**

NATIONAL WILD & SCENIC RIVERS SYSTEM MAP

CALIFORNIA



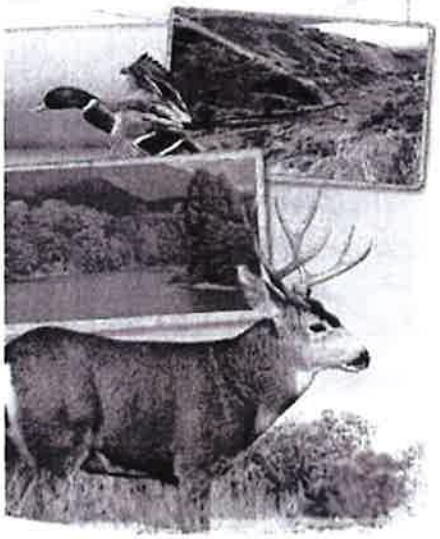
☆ **PALO VERDE**

CALIFORNIA

California has approximately 189,454 miles of river, of which 1,999.6 miles are designated as wild & scenic—1% of the state's river miles.

Amaragosa River
American River (Lower)
American River (North Fork)
Bautista Creek
Big Sur River
Black Butte River
Cottonwood Creek
Eel River
Feather River
Fuller Mill Creek
Kern River
Kings River
Klamath River
Merced River
Owens River Headwaters
Palm Canyon Creek
Piru Creek
San Jacinto River (North Fork)
Sespe Creek
Sisquoc River
Smith River
Trinity River
Tuolumne River

Seen as barren by the first explorers to today's first-time visitors, the rivers of the high desert simply hide their treasures well.



Attachment 9

04-09-14 APCD Palo Verde Project Letter

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606
FAX: (760) 353-9904

AIR POLLUTION CONTROL DISTRICT

April 9, 2014

Esperanza M. Colio
Community & Economic Development Manager
940 West Main Street, Suite 203
El Centro, CA 92243

SUBJECT: Palo Verde Water District Improvements Project

Mrs. Colio,

The Imperial County Air Pollution Control District (Air District) has finalized its review of the Palo Verde Water District Improvement Project. The Palo Verde Water District is located in the Colonia of Palo Verde in the northeast Imperial County. The Palo Verde Water system was first constructed in 1983 and consists of two water supply wells, a water treatment system, two steel storage tanks, a booster pump station, and a pipeline distribution network consisting of 8-inch and 6-inch diameter water mains and currently provides potable water to approximately 170 service connections to the community.

The following activities describe the project's proposed repairs/upgrades:

- Replacement of storage tanks (north and south tanks)
- Structural repairs of storage tank (north tank)
- Interior coating rehabilitation (north tank)
- Upgrades and modifications to water treatment system
- Rehabilitation of existing wells (replacement in place if necessary)
- Disinfection of tanks
- Cross connection controls.

Please note that Imperial County is listed by EPA as of December 05, 2013, under Currently Designated Nonattainment Areas for the following criteria pollutants:

- 8-Hr Ozone 1997- (Moderate)
- PM-10 - Imperial Valley, CA - (Serious)
- PM-2.5 2006 Imperial Co, CA - (Nonattainment)
- 8-Hr Ozone 2008 Imperial County, CA - (Marginal).

General conformity determination in Imperial County must follow 40 Code of Federal Regulations (CFR) Part 93. For this project section 40 CFR Part 93.153 has been determined as applicable. Based on details provided for proposed construction activities, it was also determined that the project falls below the Air District's Rule 424 VOC thresholds for Rust Preventive Coatings.

Expected emissions from proposed repairs/upgrades do not exceed Nox and PM10 thresholds, and is therefore found to be *de minimis* (refer to attachment A, Table 1 for project emissions and Table 2 for thresholds values).

However, the Air District strongly recommends adherence to Section 7.1 of Imperial County CEQA Air Quality Handbook (Standard mitigation measures for construction activities and construction equipment), and to Regulation VIII (Fugitive Dust Control Measures). The applicant should submit a Dust Control Plan and Construction Notification Form within two (2) weeks prior to any earthmoving activity, as well as a Rule 310 application to discuss a possible exemption. If sandblasting activities or the operation of any engines 50 HP rating or greater will occur, the contractor must contact the Air District Engineering Department to discuss required permits.

The Air District's rule book, including all new regulations can be accessed via internet at http://www.co.imperial.ca.us under "Air Pollution Control". Thank you for giving the Air District an opportunity to comment on this project. Should you have any questions please do not hesitate to call the office at 760-482-4606.

Respectfully,

Linda L. Cedillo

Linda Cedillo
APCD
Environmental Coordinator

Attachment A

Table 1. Palo Verde Water District Improvement Project estimated emissions.

Pollutant	ROG	NOx	CO	SO2	PM10	PM2.5
Tons/year	0.0905	0.8678	0.5171	7e-004	0.608	0.0563

Table 2. Conformity Thresholds

Ozone (VOC's or NOX) Tons/year	
Serious NAA's	50
Severe NAA's	25
Extreme NAA's	10
Other ozone NAA's outside an ozone transport region	100
Marginal and moderate NAA's inside an ozone transport region Tons/year	
VOC	50
NOX	100
Carbon monoxide: All NAA's	100
SO2 or NO2™ All NAA's	100
PM–10 Tons/year	
Moderate NAA's	100
Serious NAA's	70
Pb: All NAA's	25

Attachment 10

Primary Farmland Map - Palo Verde

ATTACHMENT 10

PRIMARY FARMLAND MAP

PALO VERDE, CA

PRIME FARMLAND

PRIME FARMLAND HAS THE BEST COMBINATION OF PHYSICAL AND CHEMICAL FEATURES ABLE TO SUSTAIN LONG TERM AGRICULTURAL PRODUCTION. THIS LAND HAS THE SOIL QUALITY, GROWING SEASON, AND MOISTURE SUPPLY NEEDED TO PRODUCE SUSTAINED HIGH YIELDS. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF STATEWIDE IMPORTANCE

FARMLAND OF STATEWIDE IMPORTANCE IS SIMILAR TO PRIME FARMLAND BUT WITH MINOR SHORTCOMINGS, SUCH AS GREATER SLOPES OR LESS ABILITY TO STORE SOIL MOISTURE. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

UNIQUE FARMLAND

UNIQUE FARMLAND CONSISTS OF LESSER QUALITY SOILS USED FOR THE PRODUCTION OF THE STATE'S LEADING AGRICULTURAL CROPS. THIS LAND IS USUALLY IRRIGATED, BUT MAY INCLUDE NONIRRIGATED ORCHARDS OR VINEYARDS AS FOUND IN SOME CLIMATIC ZONES IN CALIFORNIA. LAND MUST HAVE BEEN CROPPED AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF LOCAL IMPORTANCE

IRRIGATED AND NONIRRIGATED LANDS SIMILAR TO PRIME AND STATEWIDE SOILS.

URBAN AND BUILT-UP LAND

URBAN AND BUILT-UP LAND IS OCCUPIED BY STRUCTURES WITH A BUILDING DENSITY OF AT LEAST 1 UNIT TO 1.5 ACRES, OR APPROXIMATELY 6 STRUCTURES TO A 10-ACRE PARCEL. COMMON EXAMPLES INCLUDE RESIDENTIAL, INDUSTRIAL, COMMERCIAL, INSTITUTIONAL FACILITIES, CEMETERIES, AIRPORTS, GOLF COURSES, SANITARY LANDFILLS, SEWAGE TREATMENT, AND WATER CONTROL STRUCTURES.

OTHER LAND

OTHER LAND IS LAND NOT INCLUDED IN ANY OTHER MAPPING CATEGORY. COMMON EXAMPLES INCLUDE LOW DENSITY RURAL DEVELOPMENTS, BRUSH, TIMBER, WETLAND AND PRIVATE RECREATIONAL LAND NOT SUITABLE FOR LIVESTOCK GRAZING, CONFINED LIVESTOCK, POULTRY, OR AQUACULTURE FACILITIES, STRIP MINES, BORROW PITS, AND WATER BODIES SMALLER THAN 40 ACRES. VACANT AND NONAGRICULTURAL LAND SURROUNDED ON ALL SIDES BY URBAN DEVELOPMENT, AND GREATER THAN 40 ACRES IS MAPPED AS OTHER LAND.

WATER

PERENNIAL WATER BODIES WITH AN EXTENT OF AT LEAST 40 ACRES.

Project Location

Attachment 11

County Ordinance - Noise Abatement & Control

ATTACHMENT 11

TITLE 9

DIVISION 7: NOISE ABATEMENT AND CONTROL

CHAPTER 2: LIMITS

§ 90702.00 SOUND LEVEL LIMITS.

A. It shall be unlawful for any person to cause noise by any means to the extent that the applicable one-hour average sound level set out in the following table is exceeded, at any location in the County of Imperial on or beyond the boundaries of the property on which the noise is produced.

TOTAL OF APPLICABLE LIMITS

	Land Use Zone	Time of Day	One Hour Average Sound Level (decibels)
1.	Residential: All R-1	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45
2.	All R-2	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
3.	R-3, R-4 & all Other Residential	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50
4.	All Commercial	7 a.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55
5.	Manufacturing, all other Industrial, including Agricultural & Extraction Industry	(anytime)	70
6.	General Industrial	(anytime)	75

B. The Sound Level limit between two zoning districts (different land uses) shall be measured at the property line between the properties.

C. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this Section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

D. This section does not apply to firework displays authorized by permit from the Fire Department, or other Regulatory Agency.

E. This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit.

southwest of Brawley. Improvements to, and addition of non-State roads to the Imperial County roadway system are described in the Circulation Element.

TABLE 3
IMPERIAL COUNTY INTERSTATE AND STATE HIGHWAY TRAFFIC AND NOISE DATA (EXISTING CONDITIONS)

Road Segment	Traffic					Noise			
	Volume (thousands)	Speed (mph)	Vehicle Mix (percent)			Reference CNEL dB	Distance to ___ dB		
			Auto	Med	Heavy		70 feet	65 feet	60 feet
I-8									
w/o Ocotillo	10.7	65	84	4.8	11.2	76	180	565	1605
e/o Ocotillo	8.6	65	84	4.8	11.2	75	145	455	1355
w/o El Centro	10.9	65	87	4.0	9.0	75	170	525	1455
e/o El Centro	22.9	65	89	3.4	7.6	78	325	1005	2205
e/o 111	8.4	65	83	5.0	12.0	75	145	455	1355
w/o 115	6.5	65	81	4.8	14.2	74	125	380	1155
e/o 115	7.2	65	77	4.6	18.4	75	160	495	1405
e/o 98	8.7	65	80	4.4	15.6	75	170	530	1505
w/o 186	10.7	65	80	4.4	15.6	76	215	655	1705
e/o 186	14.0	65	80	4.4	15.6	77	275	855	2005
SR-78									
w/o 86	0.6	55	66	6.1	27.9	64	*	*	135
e/o 111S	3.5	55	70	2.1	27.9	72	80	240	775
e/o 115S	1.5	55	73	7.0	20.0	67	*	85	275
SR-86									
w/o 111	4.3	55	93	4.8	2.2	68	*	105	315
s/o 8	9.2	55	94	4.1	1.9	71	70	205	630
s/o 78E	13.5	55	90	4.8	5.2	74	130	385	1160
nw/o Brawley	5.3	55	78	6.8	15.2	72	85	245	780
s/o 78W	4.6	55	52	5.1	42.9	75	150	465	1380
n/o 78W	4.1	55	52	5.0	43.0	74	135	410	1225
SR-98									
e/o Ocotillo	1.8	55	89	4.6	6.4	65	*	55	175

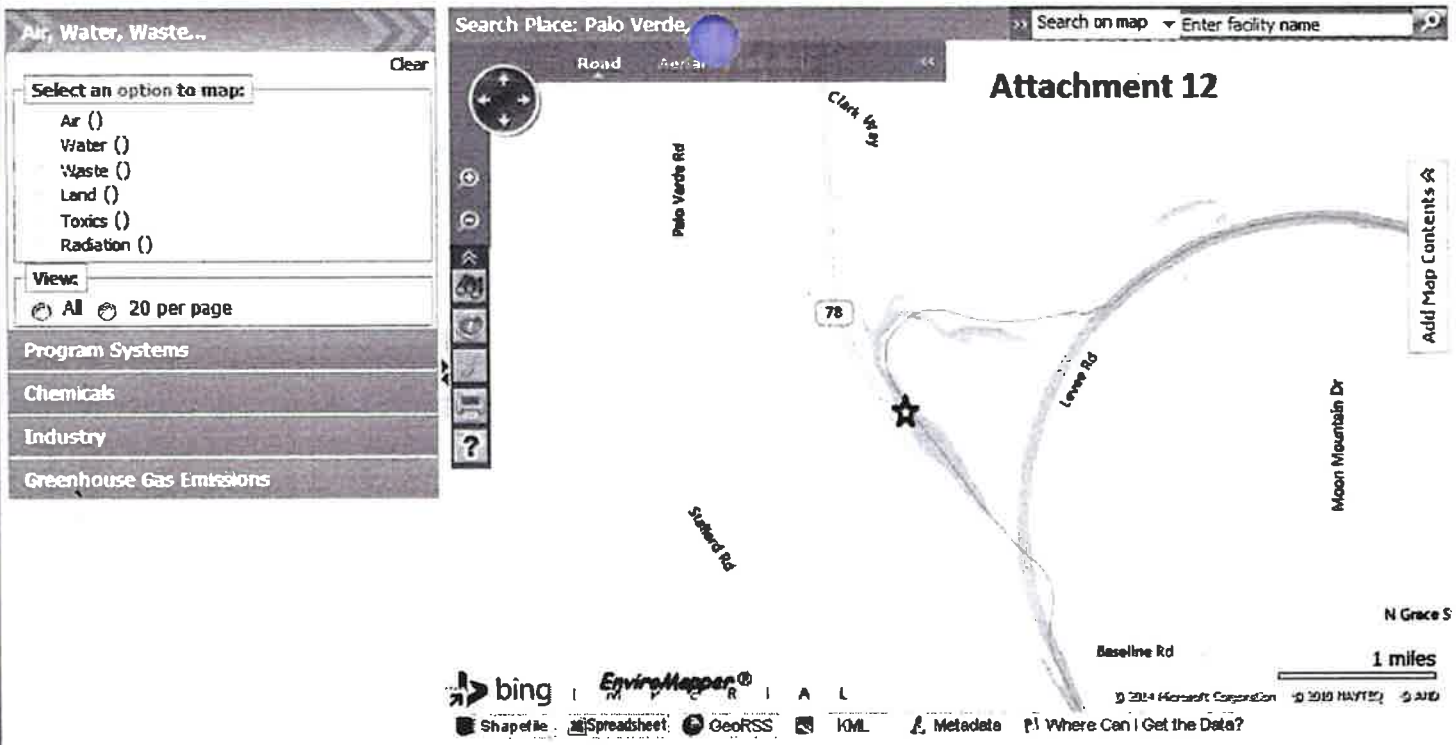
TABLE 4
IMPERIAL COUNTY INTERSTATE AND STATE HIGHWAY TRAFFIC AND NOISE DATA
(FUTURE/YEAR 2015 CONDITIONS)

Road Segment	Traffic Volume (thousands)	Noise				Increases	
		Reference CNEL dB	Distance to __ dB			CNEL dB	Distance to 60 CNEL feet
			70 feet	65 feet	60 feet		
I-8							
w/o Ocotillo	26.1	79	440	1300	2600	3	995
e/o Ocotillo	18.3	78	310	970	2150	3	795
w/o El Centro	29.2	79	445	1310	2625	4	1170
e/o El Centro	50.4	81	705	1790	3230	3	1025
e/o 111	15.9	77	280	870	2020	2	665
w/o 115	12.7	77	240	755	1850	3	695
e/o 115	14.1	78	305	960	2120	3	715
e/o 98	13.9	77	275	865	2010	2	505
w/o 186	21.5	79	425	1255	2560	3	855
e/o 186	37.5	82	735	1840	3290	5	1285
SR-78							
w/o 86	1.6	69	*	114	362	5	227
e/o 111S	6.0	74	130	412	1230	2	455
e/o 115S	3.0	70	55	172	545	3	270
SR-86							
w/o 111	6.0	69	44	137	435	1	120
s/o 8	26.9	76	186	590	1600	5	970
s/o 78E	20.0	76	180	570	1560	2	380
nw/o Brawley	7.7	74	118	372	1145	2	365
s/o 78W	17.6	80	550	1520	2905	5	1525
n/o 78W	9.9	78	310	975	2160	3	755
SR-98							
e/o Ocotillo	6.1	71	59	187	590	6	415
w/o Drew	7.1	72	74	234	740	6	520
w/o 111	26.1	76	209	660	1710	3	760
w/o 8	1.1	66	*	61	193	1	33
SR-111							
s/o 86W	43.0	78	349	1075	2305	2	650
s/o 8	37.8	78	294	920	2095	3	590
n/o 8	16.3	75	168	532	1480	2	500

Attachment 12

EPA Environmapper Palo Verde Water Treatment Project

Attachment 12

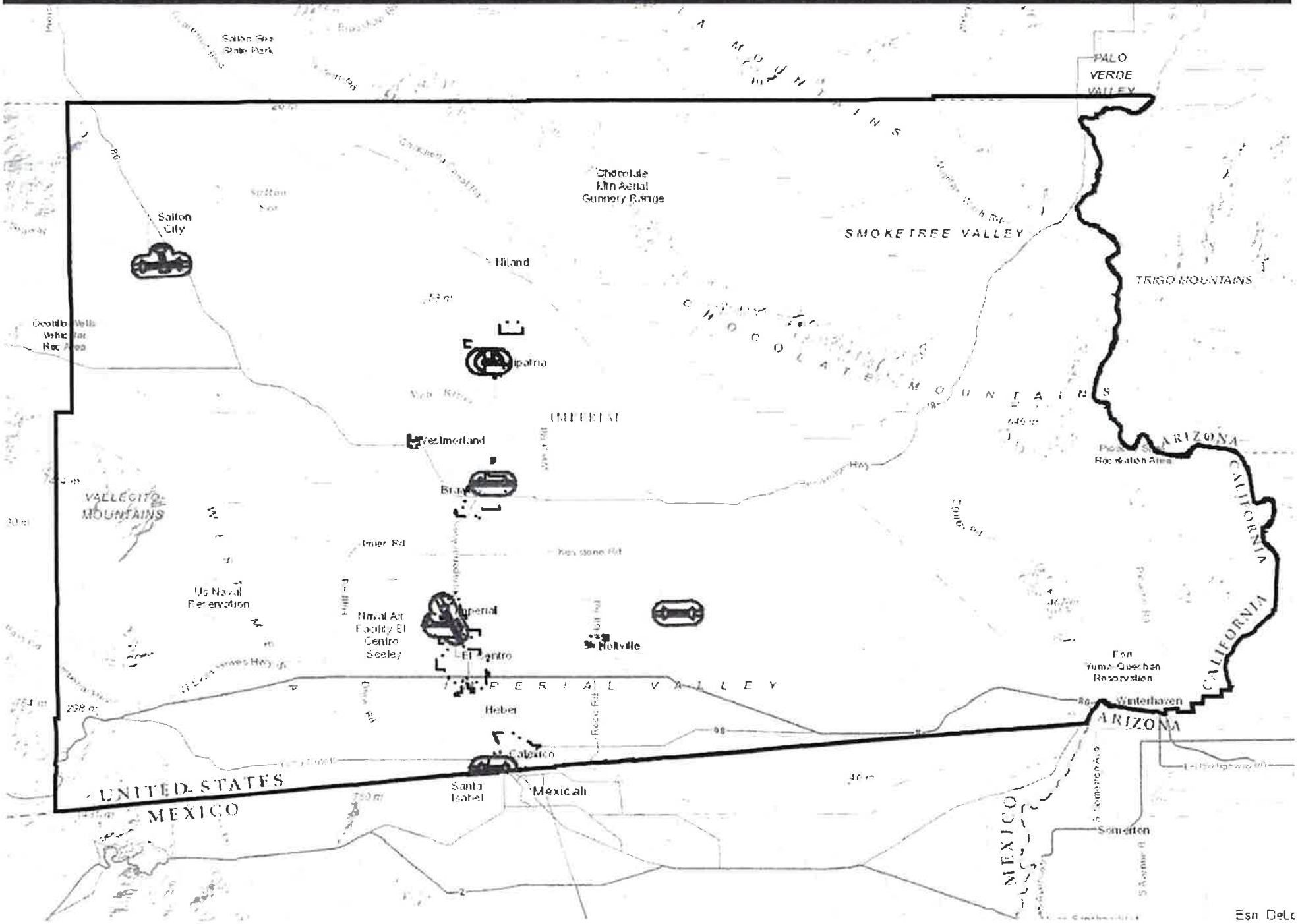


☆ **Project Location**

Attachment 13

Imperial County Airport Land Use Compatibility Map

ompati lity


PALO VERDE VALLEY
Salton City
Chocolate Mtn Aerial Gunnery Range
SMOKETREE VALLEY
Niland
TRIGO MOUNTAINS
CHOCOLATE MOUNTAINS
Ocotillo Wells Vehicular Rec Area
Ipatria
IMPERIAL
Westmorland
Brawley
ARIZONA
CALIFORNIA
Rec reation Area
VALLECITO MOUNTAINS
Imler Rd
Keystone Rd
US Naval Reservation
Naval Air Facility El Centro Seeley
Imperial
Holtville
El Centro
Fort Yuma Quechan Reservation
IMPERIAL VALLEY
Heber
Winterhaven
ARIZONA
CALIFORNIA
Mexicali
Santa Isabel
UNITED STATES
MEXICO
MEXICO
Somerton
Esri DeLo

Attachment 14

Seismic and Safety Element

Attachment 13

SEISMIC AND PUBLIC SAFETY ELEMENT

Prepared by:

Planning/Building Department
County of Imperial
939 Main Street
El Centro, California 92243-2875

Jurg Heuberger, AICP
Planning Director

Approved by:
Board of Supervisors

SEISMIC AND PUBLIC SAFETY ELEMENT
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IMPERIAL COUNTY GENERAL PLAN
SEISMIC AND PUBLIC SAFETY ELEMENT

I. INTRODUCTION

A. Preface

The County of Imperial is exposed to a wide variety of hazards that result from natural phenomena and human-induced accidents. These hazards can result in loss of life, bodily injury, and property damage. The County is bisected by active seismic faults that could generate dangerous earthquakes and other geologic activity. Although the County is located in a desert with very low precipitation, it is sometimes subject to heavy rains and subsequent flooding. Flooding could also result from damage to the All American Canal and associated transmission aqueducts. A few hazardous waste facilities are located in the County and accidents could dangerously pollute air and water.

The Seismic and Public Safety Element identifies potential natural and human-induced hazards and provides policy to avoid or minimize the risk associated with hazards. Potential hazards must be addressed in the land use planning process to avoid the unfolding of dangerous situations. For example, the risk associated with dangerous flooding can be avoided by not allowing development in floodplains and imposing strict safety standards on water transmission facilities.

A Safety Element is a mandatory element of the General Plan according to California Government Code Section 65302. This Seismic and Public Safety Element has been prepared to conform to the following requirement of the Government Code:

> A safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides, subsidence and other geologic hazards known to the legislative body; flooding; and wildland and urban fires. The safety element shall include mapping of known seismic and other geologic hazards. It shall also address evacuation routes, peakload water supply requirements, and minimum road widths and clearances around structures, as those items relate to identified fire and geologic hazards.

B. Purpose of the Seismic and Public Safety Element

The purpose of the Seismic and Public Safety Element is directly concerned with reducing the loss of life, injury, and property damage that might result from a disaster or accident. This Element identifies goals and policies that will minimize

the risks associated with natural and human-made hazards. In addition, the Element specifies land use planning procedures that should be implemented to avoid hazardous situations.

C. Risk Assessment

Risk assessment refers to the subjective process of comparing the cost to avoid or reduce a hazard with the cost of the potential damage produced by the hazard. The concepts "acceptable risk" and "avoidable risk" are important in risk assessment. An avoidable risk refers to situations where the risk of a potential hazard can be entirely reduced by circumventing the development of the potential hazard. An example of an avoidable risk is the preclusion of residential development in floodplains. Avoiding the risk, however, can involve costs which are measured by time, money, inconvenience, and inefficiency. Under these circumstances, the reduction in risk must be weighed against costs. An acceptable risk refers to the point where an incremental reduction in risk does not justify increased cost. An example of an acceptable risk is the development of a gravel mining operation in a floodplain that possesses large gravel reserves. While there is a risk of flooding, locating a gravel mining operation outside of the floodplain would be inefficient and economically infeasible.

In establishing guidelines for acceptable risk, the County makes distinctions between hazards resulting in personal injury or loss of life, hazards resulting in disruption of essential services, and hazards resulting in damage to structures and property. The risks of personal injury, loss of life, and the disruption of lifelines are unacceptable but the risk of structural damage is acceptable. The County will impose restrictions or conditions on development to avoid personal injury, loss of life, and lifeline disruption and reduce the threat of structural damage.

II. EXISTING CONDITIONS AND TRENDS

A. Geologic Activity

Earthquakes are the principal geologic activity affecting public safety in Imperial County. They are a triggering event which permit the force of gravity to operate and create many secondary hazards from ground shaking, including: (1) differential ground settlement, soil liquefaction, rock and mudslides, ground lurching, and avalanches; (2) ground displacement along the fault; (3) floods from dam and levee failure, and seiches; (4) fires; and (5) the various adverse results of disruption of essential facilities and systems - water, sewer, gas, electricity, transportation, and communication (and notably in Imperial Valley, the irrigation and drainage system). This section will focus on earthquakes and other geologic activities; flooding, fires, and disruption of essential services, whether seismically induced or otherwise, will be discussed separately.

1. Earthquakes

Earthquakes, are the result of an abrupt release of energy stored in the earth. This energy is generated from the forces which cause the continents to change their relative position on the earth's surface, a process called "plate tectonics." The earth's outer shell is composed of a number of relatively rigid plates which move slowly over the comparatively fluid molten layer below. The boundaries between plates are where the more active geologic processes take place. Earthquakes are an incidental product of these processes.

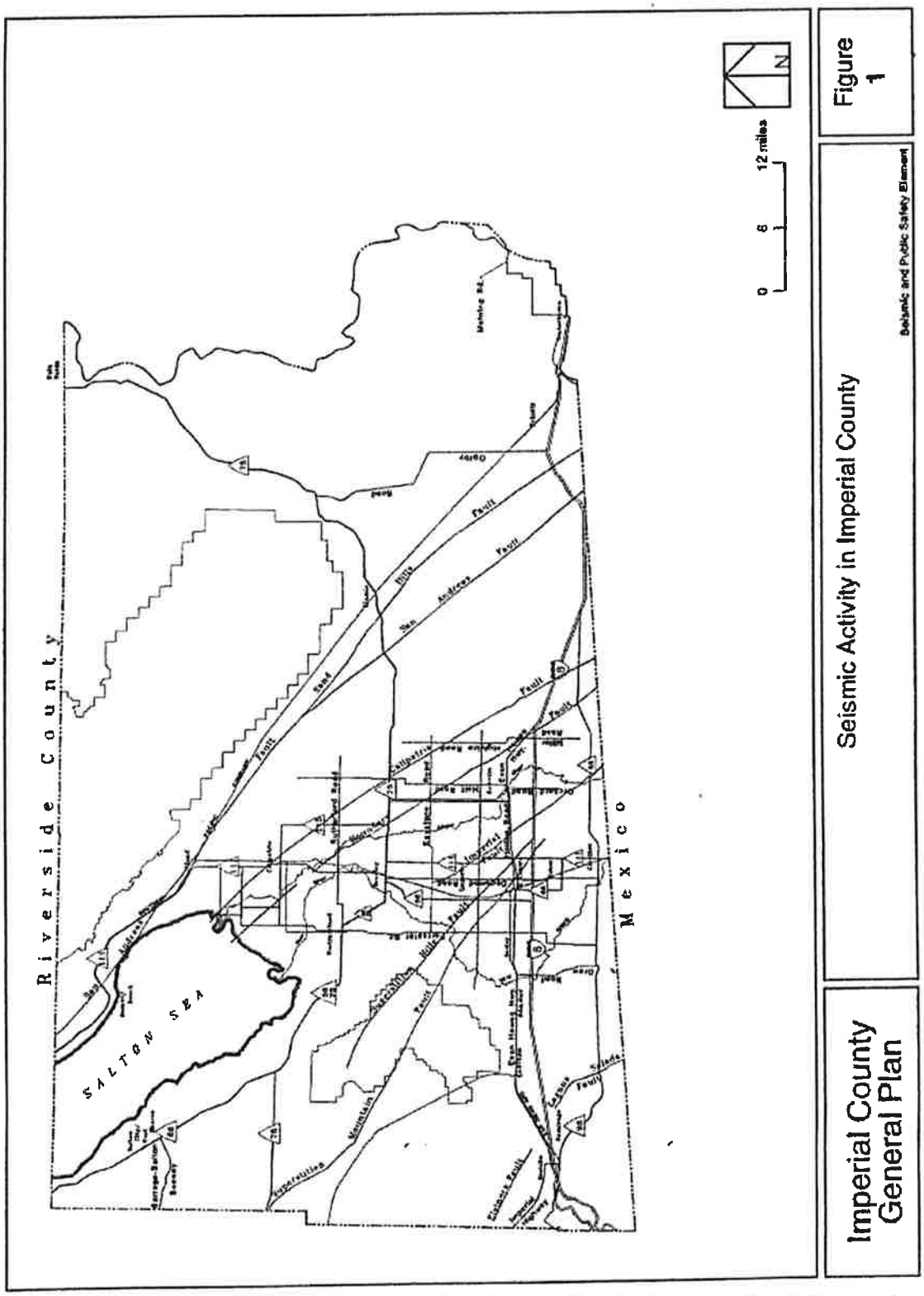
California rests on the boundary between the North American Plate and the Pacific Plate. The San Andreas Fault system is located where the northwesterly drifting Pacific Plate grinds along and is subducted by the southwesterly drifting North American Plate. Baja, and California west of the fault system, are part of the Pacific Plate and move northwest compared to the rest of California and North America.

The Imperial Valley is a broad, flat, alluviated area that lies partly below sea level, cut off from the Gulf of California to the south by the Colorado River Delta. The valley, also known as the Salton Trough, is one of the most tectonically active regions in the United States. The eastern boundary is formed by branches of the San Andreas fault and the western boundary is formed by the San Jacinto-Coyote Creek and the Elsinore-Laguna Salada Faults. Consequently, the Valley is subject to potentially destructive and devastating earthquakes. Figure 1 shows the general location of known or inferred major fault lines in Imperial County.

More small to moderate earthquakes have occurred in the Imperial Valley area than along any other section of the San Andreas Fault system. During the current century, the areas has experienced eleven earthquakes of magnitude 6.0

or greater on the Richter scale with the strongest being a magnitude of 7.1 on the Imperial Fault in 1940.

Figure 1 - Seismic Activity in Imperial County



The deep, sediment-filled geologic structure of the Imperial Valley makes the area particularly susceptible to severe earthquake damage. The Cities of Brawley, Imperial, El Centro, and Calexico have experienced damage from the movements of major faults in the San Jacinto fault zone, which includes the Imperial and Superstition Hills Faults.

A moderate to severe incident with intense ground shaking in the populated areas of Imperial County could reasonably be expected to cause numerous casualties, extensive property damage, fire, road closures, disruption of rail systems, communication systems (particularly telephone systems), the County's extensive canal system, and utilities. In addition, health hazards would be posed by damaged sewer systems, waste treatment facilities, and the possible contamination of the County's potable water supply. Medical treatment facilities would most likely be overtaxed. Theft and looting may also be a problem. The resultant disruption of the agricultural community would affect the local economy.

In accordance with the Alquist - Priolo Special Studies Zone Act (Chapter 7.5, Division 2, Public Resources Code, State of California, effective May 4, 1975) the Office of State Geologist delineated Special Study Zones which encompass potentially and recently active traces of four major faults (San Andreas, Calaveras, Hayward and San Jacinto). These Special Study Zone Maps depicting active fault traces are available for public review at the Imperial County Planning Department and the Imperial County Public Works Department. The Alquist - Priolo Special Study Zone Act is enforced by the County to assure that homes, offices, hospitals, public buildings, and other structures for human occupancy which are built on or near active faults, or if built within special study areas, are designed and constructed in compliance with the County of Imperial Codified Ordinance.

It is difficult to predict the severity of casualties and property damage that could result from an earthquake. The severity of casualties and property damage depend on the intensity of the earthquake, location of the epicenter to populated areas, and the time of day of the occurrence. The analysis of past earthquakes provides some useful information regarding the potential consequences of future severe earthquakes. Appendix A provides a summary of earthquakes that have impacted the County between 1852 and 1988.

The 1940 earthquake along the Imperial Fault registered a 7.1 on the Richter scale. The epicenter was located east of El Centro. The ground was ruptured for forty miles from Volcano Lake in Baja California to a point near the City of Imperial. Seven deaths occurred and property loss was in excess of $5 million. Eighty percent of the buildings in Imperial were destroyed; fifty percent of Brawley's structures were damaged. Indirect damage to crops was substantial due to the subsequent disruption of drainage and flooding. Horizontal displacement across the completed but unfilled International Canal was 14 feet, 10 inches and the U.S.-Mexico boundary was permanently changed. The Alamo

Canal in Baja California was also offset and a local flood resulted from water spilling out of the broken channel.

Perhaps the most conspicuous area of surface rupture was on State Highway 98 eight miles east of Calexico. The roadway was broken by a four-foot scarp, and rows of trees in an orange grove south of the highway and west of the Alamo River bridge were offset almost 10 feet. The maximum horizontal displacements of the earthquake, which were approximately 29 feet, were measured in the area just south of the orange grove.

Existing information about earthquakes that have occurred in Imperial Valley suggest that an equal number of earthquakes of equal intensity may occur within the future. The County can expect injuries, casualties and property damage from earthquakes as some time in the future because of the past frequency of moderately high magnitude and intensity earthquakes; the distribution of active faults and epicenters; and the projected increase in population.

2. Landslides

A landslide refers to slowly to very rapidly descending rock or debris caused by the pull of gravity. Landslides affect humans in many ways. A very rapid landslide could result in casualties and devastating property damage while a slow landslide could result in the nuisance of having a fence slowly pulled apart. The cost in lives and property from landslides is surprisingly high. According to the U.S. Geological Survey, more people in the United States died from landslides during the last three months of 1985 than were killed by all other geologic hazards, such as earthquakes and volcanic eruptions. The damage to property from landslides each year exceeds the cost of earthquake damage for the last twenty years.

The process of grading can accelerate landslide activity. Slope and material failure often results from failing to utilize precautionary measures to stabilize slopes or cutting into the failure plane of an existing landslide. In California, landslides are a common problem in the hillside areas and particularly in developed hillside areas that required grading.

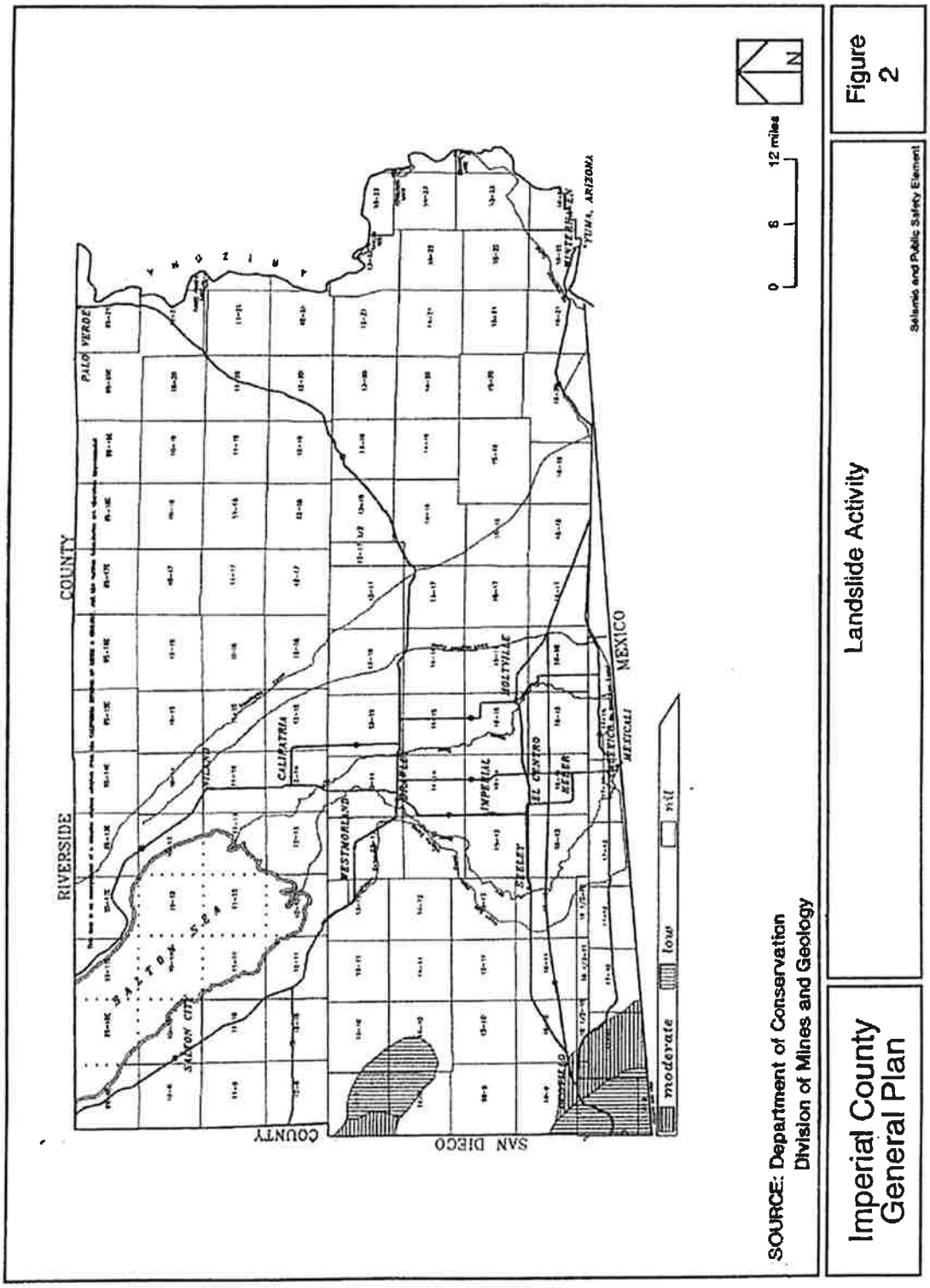
The potential for landslides in Imperial County is low to moderate along the western edge of the County parallel to the Coast Range Mountains. Additional areas in the County subject to landslides include the irrigated valley between the East Highline and Westside Main canals and bluffs adjacent to the All American Canal, Coachella Canal, New River, Alamo River, and the Colorado River. The hazardous landslide areas adjacent to these water courses are defined as:

1. A distance of fifty feet outside of the shaded flood zone areas delineated on the Federal Emergency Management Agency (FEMA) maps for the New and Alamo Rivers; and

2. A distance of one-half the canal bank height beyond the toe of the slope for all of the levee and canal banks.

Figure 2 illustrates the distribution of landslide activity in the County.

Figure 2 - Landslide Activity



3. Subsidence

Subsidence is the gradual, local settling or sinking of the earth's surface with little or no horizontal motion. Subsidence is usually the result of gas, oil, or water extraction, hydrocompaction, or peat oxidation, and not the result of a landslide or slope failure. Ground surface effects related to subsidence are generally restricted to long surface structures such as canals, drains, and sewers, which are sensitive to slight changes in elevation.

Subsidence from earthquakes and other activities, including geothermal resources development, can disrupt drainage systems and cause localized flooding. Agricultural operations within the County depend on gravity-fed irrigation, drainage, and tiling systems. These systems utilize existing land contours and have little tolerance for change. Areas away from the irrigated fields, canals, and drains may be less sensitive to land surface elevation change.

It is also to be noted that the "Valley", within the County, experiences a continuous natural subsidence toward the Salton Sea. Natural subsidence has been occurring within the Salton Trough, averaging nearly two inches per year at the center of the Salton Sea and it decreases to zero near the Mexican border. It is generally uniform, but local depressions have formed such as the Mesquite Sink located along Highway 86 between Imperial and Brawley. Earthquakes have caused abrupt elevation changes in excess of one foot across fault lines.

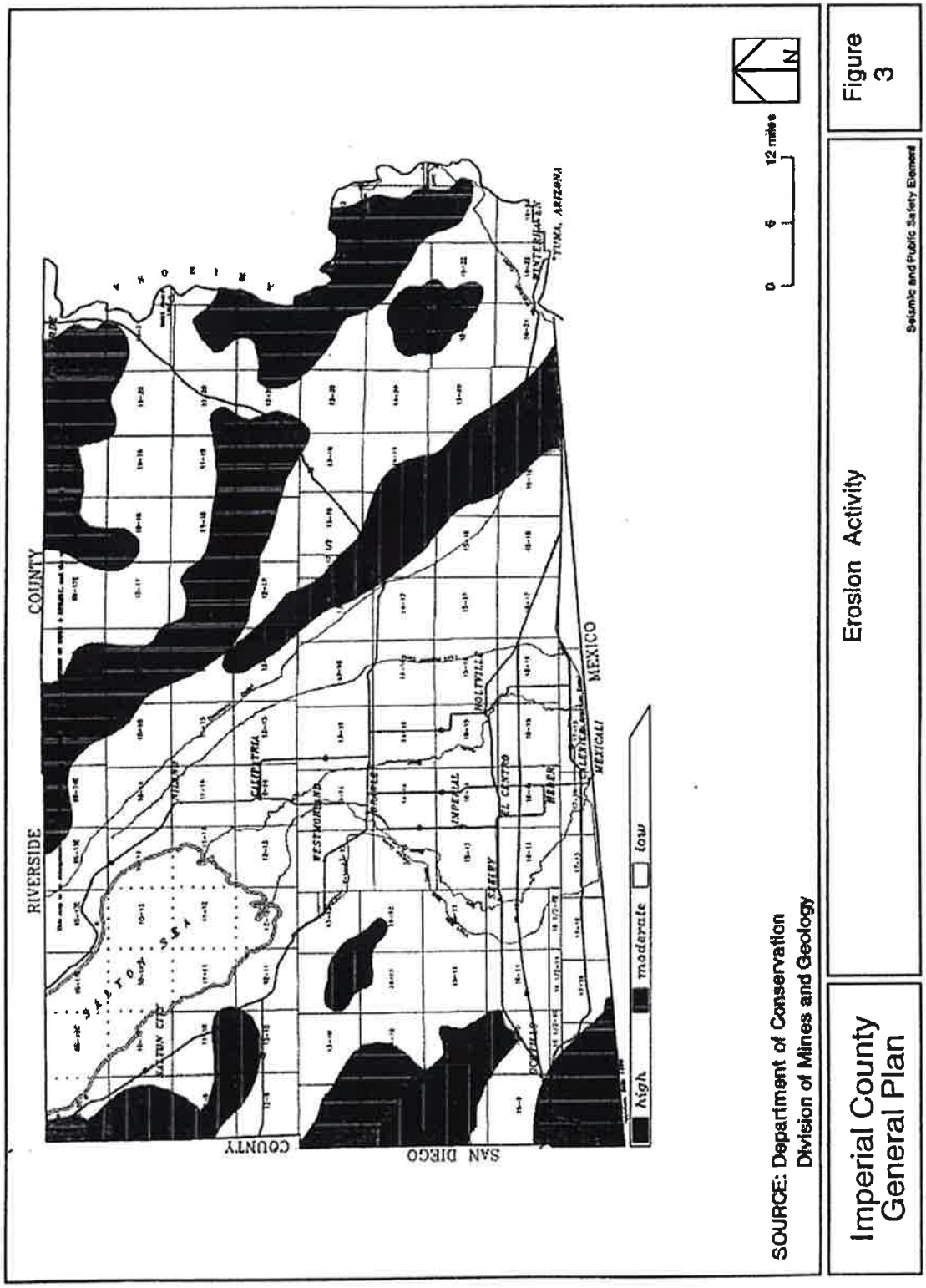
Increases in development of geothermal resources could be a factor for the future. Recent reports by the geothermal industry in the Heber area indicates that some subsidence has occurred over several years and could be expected to change further depending on the rate and volume of extraction/injection.

Well field programs covering production and injection plans are required by the Bureau of Land Management and the Division of Oil and Gas for each major geothermal project. Detrimental subsidence from geothermal development needs to be avoided through careful permit review by CDOG and the County, establishment of standards for each project, and through impact mitigation and monitoring programs.

4. Erosion

Erosion is the removal of rock fragments or soil by the action of running water, glacial ice, or wind. Human activities can accelerate erosion. The areas in Imperial County that are most subject to erosion are the Algodones Sand Dunes parallelling the East Mesa and Superstition Mountain, and the Chocolate, Picacho, Cargo Muchacho, and Coast Range Mountains. The remainder of Imperial County is generally flat and experiences low levels of natural erosion. Figure 3 illustrates the erosion activity throughout the County.

Figure 3 - Erosion Activity



5. Soil Stability

The geologically young, unconsolidated sediments of the Salton Trough are subject to failure during earthquakes, especially throughout the irrigation portion of the Valley where the soil is generally saturated. Liquefaction, and related loss of foundation support, is a common hazard.

B. Flooding

Flooding is a natural hazard present in Imperial County due to the County's geography, geology and climate. There are various facets to flooding; all of which are relevant to Imperial County. Flood hazards include the following: natural floodplains, seiches, and dam failure.

1. Natural Floodplains

The entire county is subject to various degrees of flooding in the form of flash floods or slow floods caused by heavy precipitation. Flash flooding is not infrequent in desert areas. Such flooding occurs when sudden downpours over the mountains and/or desert tend to create instantaneous peak flows which roughly follow empty stream beds and mountain washes.

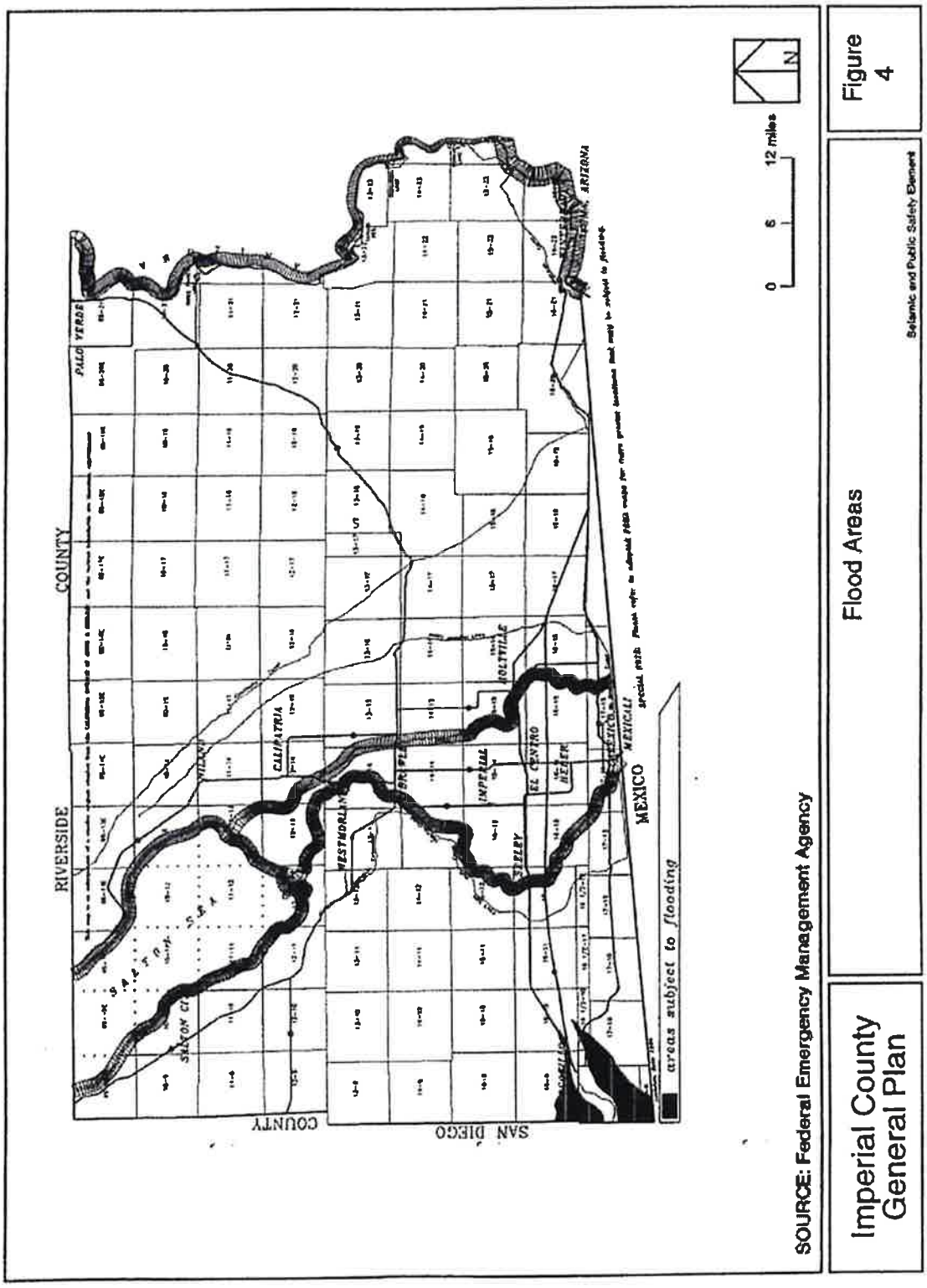
Flooding can occur either in floodplains or floodways. Floodplains are generally located adjacent to rivers and other bodies of water, and in low lying areas near a water source. The external boundary of floodplains is defined by the predicted extent of inundation that would result from the most intense storm that occurs once every one hundred years. Floodways are defined by discernible drainage channels. Floodways are more hazardous due to the anticipated velocities of the flood waters and expected damage to life and property. Such designations occur along the Myer Creek (through Ocotillo) and within the levees along the Colorado River. Further information can be obtained by consulting the Flood Insurance Rate Maps (FIRM's) prepared by the Federal Emergency Management Agency, which are on file with the County Department of Planning. Figure 4 illustrates the areas in the County that are particularly at risk to flood hazards.

Within the County jurisdiction, the communities of Bombay Beach and Ocotillo are considered to be the most likely to experience significant flooding. In El Centro, the Gillett/Cannon Roads area receives the heaviest flooding. It is at a low elevation east of El Centro and south of East Evan Hewes Highway.

Bombay Beach is located in a pocket created by the Salton Sea on the west and the Chocolate Mountains on the east. Severe flooding could isolate the community. In the event of a major flood, approximately 300 to 1,000 residents would have to be evacuated.

The communities of Ocotillo and Nomirage are at risk due to their location at the base of an alluvial fan originating at the base of Myer Creek. More specifically, Myer Creek is located in the southwestern part of Imperial County and flows in a northeasterly direction through the townsites of Ocotillo and Nomirage, draining over 21.8 square miles.

Figure 4 - Natural Floodplains



Flood plain management is the key component to effective flood control within Imperial County. The Federal Insurance Administration delineates areas of special flood hazards, the risk premium zones, and floodways through official maps: Flood Insurance Rate Map (F.I.R.M.); and Flood Boundary and Floodway Map. These maps form the basis for Imperial County's Flood Ordinance which is intended to be applied to those areas which are subject to periodic flooding and accompanying hazards. These official maps show all canals, drains, and rivers, and at 1"-1000' are a useful reference map. Most of the irrigated valley is designated zone "C" - indefinite minor flooding - reflecting the flat terrain and the canal system. Official Flood Insurance Rate Maps (F.I.R.M.) are available for public use at the Planning Department of Imperial County.

2. Seiches

A seiche is a to and from vibration of a body of water like the slopping of water in a jolted basin. Once initiated, the water body continues to oscillate independently. Seiches can be triggered by seismic events such as earthquakes.

The most likely location for a significant seiche to occur is the Salton Sea. While there have been a number of seismic events since the formation of the Salton Sea, no significant seiches have occurred to date. A seiche could occur, however, in the Salton Sea under the appropriate seismic conditions. The Salton Sea is proximal to the San Andreas and San Jacinto faults and would be subject to significant seismic ground shaking that could generate a seiche.

3. Dam Failure

Flooding, due to dam failure, is a factor which could seriously affect eastern Imperial County. The California Office of Emergency Services is charged with keeping on file the "inundation map" and "dam failure response plan" for each dam in the state. The dam owner/operator is, however, responsible for map and plan preparation. These documents generally do not exist. Imperial Dam, the only significant dam in Imperial County, has a plan, but no map; Laguna Dam has no plan, but the map is under preparation; Senator Wash Dam has no plan or map; and the Parker Dam has a plan, but no map. Failure of any of these dams would certainly cause inundation of the down stream shorelines, all of the Bard - Winterhaven area, and possibly would flush large quantities of water through Mexico into the New and Alamo Rivers. Inundation of the community, however, is considered unlikely; hazard analysis suggests that dam failure would likely occur only if heavy precipitation was coupled with significant seismic activity near the dam. Flooding through Mexico would most probably be confined to the already designated flood areas.

C. Fire

The potential for a major fire in the unincorporated areas of the County is generally low. Fire hazards exist, however, at two different sites in the County at the fuel storage farms located south of the City of Imperial and east of Niland. In the event of a fire, assistance from various fire departments within the County would be required. The threat of fire spreading and causing major problems to other areas of the County are minimal due to the isolated locations of the fuel storage farms.

The most significant regulatory codes from the standpoint of fire safety are fire prevention and building codes. The County implements the Uniform Building Code (UBC) and the Uniform Fire Code (UFC). These uniform codes are intended to serve only as minimum standards. Therefore, it is important that these minimum fire safety standards be strictly enforced by fire and building agencies in the unincorporated County.

The Imperial County Codified Zoning Ordinance also contains provisions which act to reduce fire hazards. The Zoning Ordinance is a tool that helps prevent the construction of incompatible or hazardous structures. For example, the ordinance separates industrial, commercial and residential uses and provides for the isolation of land uses that may create excessive fire exposure to other properties. It also limits the height and bulk of buildings, specifies setbacks and distances between buildings.

The Imperial County Subdivision Ordinance is also used to reduce the risk of fire by securing, as a condition of subdivision of land, water systems of adequate size and pressure for fire fighting, and adequate roadway widths for emergency service vehicle access including maneuverability of fire trucks. As part of the review process, the Imperial County Planning Department seeks recommendations from fire and water districts wherever the proposed subdivision is located.

The County of Imperial Fire Prevention and Explosives Ordinance, Section 53101-53300, contains provisions for the purpose of prescribing regulations governing conditions hazardous to life and property from fire or explosion. Such measures in this Ordinance include the following:

Storage of flammable materials
Storage of Radioactive materials
Permit required for sale and use of fireworks
Abatement of weeds and other vegetation

The Fire Prevention Education Program encompasses a public information and education component that promotes public awareness of the significance of Fire/Safety prevention measures. This program enables the public to be better prepared when an emergency fire situation occurs.

D. Hazardous Material Accident

A hazardous material accident could occur in Imperial County due to the agricultural economy, proliferation of fuel tanks and transmission facilities, intricate canal system, and the confluence of major surface arteries and rail systems. Although a hazardous material accident can occur almost anywhere, particular regions are more vulnerable. The potential for an accident is increased in regions near roadways that are frequently used for transporting hazardous material, and in regions with agricultural or industrial facilities that use, store, handle, or dispose of hazardous material.

The release of hazardous material into the environment could cause a multitude of problems. The release of explosive and highly flammable materials have cause fatalities and injuries, required large-scale evacuations, and destroyed millions of dollars worth of property. Toxic chemicals in gaseous form have caused injuries and fatalities among emergency response teams and passerby. Serious health problems have occurred where toxins have entered either surface or groundwater supplies. Serious health problems have occurred. Releases of hazardous chemicals have been especially damaging when they have occurred in highly populated areas, or along heavily traveled transportation routes. The decree of threat posed to life and property is dependent on the type, location, and concentration of the material released, in addition to prevailing weather conditions such as precipitation, wind speed, and wind direction. Appendix B contains a summary of hazardous material storage sites, handlers, and vendors.

The Laidlaw Environmental Services hazardous waste facility located west of Westmorland is unique in the sense that a major wash traverses the site. Substantial engineering design was utilized to minimize flooding, and channel maintenance requirements have been implemented. While the facility does pose a potential risk, the continued monitoring and stringent design standards imposed on the facility have minimized the probability of a serious failure. Special reports on design requirements and risk concerns are on file at the Planning Department.

A second type of facility which is more predominant and more difficult to assess. These facilities is the chemical handling and storage facilities and include distributors, transporters, and crop dusting firms. These firms are not permitted to store the various chemicals in open areas, or in buildings not adequately protected from flood conditions. During severe flooding the potential for these chemicals to be mixed with the flood water can pose a potentially serious health concern.

Pursuant to Section 25500 et seq. of the California Health and Safety Code, the County Health Services Department is designated as the "administering agency" responsible for maintaining a list of handlers/vendors of toxics within the County. In addition, they are required to maintain, for each handler/vendor, to maintain an inventory and business plan. This information is also available to the County Fire

Marshal and city fire departments. The "Imperial County Emergency Plan" (1988) lists the ten largest concentrations of toxics in the County, which are shown on Figure 5 and are: (1) Naval Air Facility El Centro; (2) Santa Fe Pacific Pipe Line Tank Farm; (3) ST Services; (4) 89.92 miles of fuel pipelines; (5) Brea Agricultural Service; (6) United Agriculture Products; (7) Puregro Company: (8) Rockwood Chemical Company; (9) Helena Chemical Products; and (10) Wilbur Ellis Company.

E. Lifelines and Critical Facilities

The disruption of lifelines and critical facilities can endanger the safety of the public. Lifelines refer to networks of services that extend over a wide area and are vital to the public welfare. Lifelines typically involve supply sources, transmission lines, storage facilities, and distribution systems. Damage to any one of these key elements might cause loss of service to large areas or the entire service area. Lifelines can be classified into four categories: Energy, Water Transportation, and Communication. These categories circumscribe the lifelines indicated in Table 1.

TABLE 1
SUMMARY OF LIFELINES

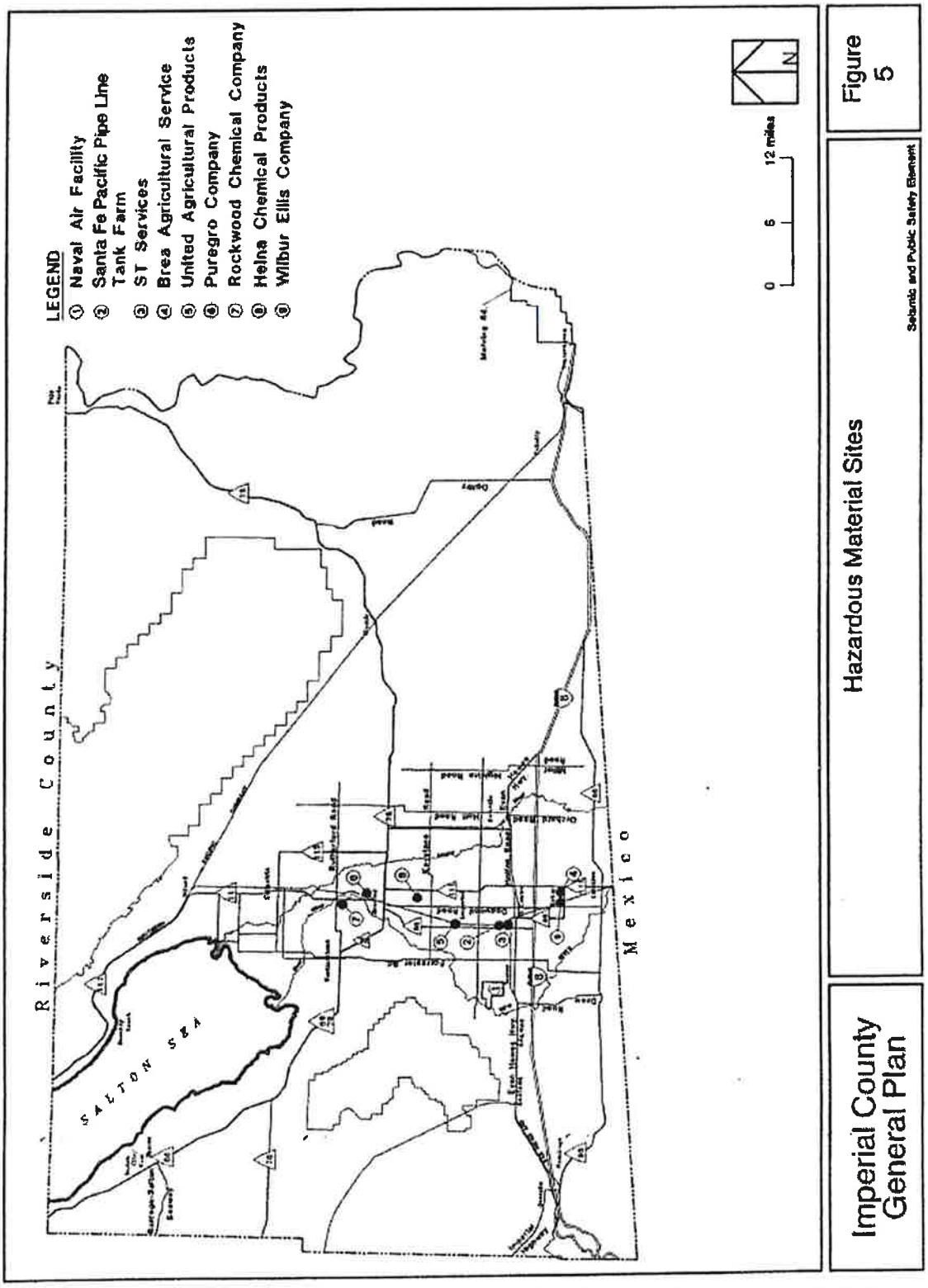
	Energy	Water	Transportation	Communications
Type of Lifelines	Electricity Liquid Fuel Gas	Potable Water Sewage Solid Waste	Highway Railway Airport Harbor	Telephone Telegraph Radio Television Mail Press

Energy. Electricity is provided to the vast majority of Imperial County and the Coachella Valley area of Riverside County by the IID. The transmission and distribution system is moderately resistant to earthquakes. When parallel overhead power lines have too much slack or sag unevenly, they may come in contact with one another during an earthquake. The resulting arcing could cause conductors to burn and fall to the ground. On the other hand, if overhead powerlines are too taut, they could snap and fall to the ground from earthquake shaking. Overhead powerlines can also be broken by objects jostled from earthquake shaking, (e.g., trees, antennas). The entire electrical distribution system is protected by relays designed to prevent current overload. Seismic vibrations themselves can cause the relays to "trip" and cut off power. Such an abrupt power disruption could cause current overloads in other parts of the system. As a result, other relays could trip and cut off more power. Although the risk of serious damage to the distribution system is low, the risk of partial or total loss of power is fairly high.

The IID's generating facilities and sources of power are varied and dispersed across the County. The probability is low for all of the facilities being disrupted simultaneously. The main generating facilities are El Centro (180 megawatts), Brawley (18 megawatts), Rockwood (50 megawatts), and Coachella (80

megawatts). Hydroelectric facilities along the All American Canal have a maximum capacity of 45 megawatts. All of these facilities are located in seismically active zones. The facilities are also located within 15 miles of each other with the exception of the Coachella plant and the hydroelectric facilities. The probability of all of the plants being disrupted during a seismic event is considered low. A break in the All American Canal could also reduce electricity generation.

Figure 5 - Hazardous Material Sites



Liquid petroleum products are delivered to and are transported through the County via the twenty-inch Santa Fe Pacific Pipe Line. This line is generally located within the Southern Pacific Railroad right-of-way. The right-of-way follows the northwest to southeast trend of Imperial Valley and subsequently parallels the major faults. It passes near the east side of the Salton Sea and serves the storage facility at Niland. Southeast of Ogilby, the line turns east and travels to Yuma. A six-inch branch line distributes gas to the storage facility south of Imperial and a four-inch line serves the Naval Air Facility near Seeley. The maintenance staff for the line anticipates no special problems from earthquakes or fault movement and are unaware of such a situation occurring in California in past years. A major break would take one to two days to repair.

The petroleum storage facilities in Niland and Imperial are vulnerable to earthquakes. Storage capacity at Niland is 77,500 barrels and at Imperial is 289,000 barrels. Storage tanks, however, are never full at one time but are normally filled fifty percent. The 1979 earthquake resulted in the rupture of one tank and a gasoline leak of 100 gallon per minute at the Imperial facility. The potential for a major disaster does exist. The probability of loss of all liquid petroleum in the County is low. Emergency service via tanker is readily available if required during an emergency situation.

Natural gas is delivered by the Southern California Gas Company via twin ten-inch lines which generally run south through the County in Range 14 East. These lines serve Niland, Calipatria, Brawley, Imperial, El Centro, Heber, and Calexico and branch lines serve Holtville, Westmorland, Seeley, NAF, and Plaster City. Rural residents are served by laterals from the branch lines. The lateral lines typically do not exceed a quarter mile in length.

The gas lines are less resilient to seismic stress than the liquid lines and the entire natural gas system is vulnerable to disruption. The lines were damaged from the 1979 earthquake. The north-south line was damaged in the area it crossed the fault. The line suffered compressive stress and a fitting buckled and resulted in a major leak. The leak was repaired without shutting down the line. The line to Holtville was stretched where it crossed the fault. The line did not break and was repaired without shutting down the line.

The natural gas network is much more extensive than the liquid petroleum system. Leaks are more insidious. The risk of an explosion or fire is greater. The most serious potential hazards are at the customer service connections. Gas connections to hot water heaters are notably vulnerable to seismic shaking.

The biggest potential problem would result from damage that required shutting the natural gas delivery system down. A major rupture of the ten-inch line would be difficult to repair. Once pressure was lost and air entered the system, a total shut down would be required. Service personnel would have to visit the

customer connections at each twice. The initial visit would be require to insure that the gas was turned off. The second visit would be required to turn the gas back on, bleed the air, and assist in relighting fixtures. This would be a massive job that would take weeks. The main purpose of the twin lines is to avoid this type of disaster.

Water and Sewer. About seventy percent of the population is provided potable water for domestic purposes from municipal water systems, which are primarily served by the Imperial Irrigation District (IID). Rural residents obtain potable water from truck delivery companies, such as the AAA Company, or from individual wells. IID operates 1700 miles of canals; and the Coachella Irrigation District operates 83 miles of canals that traverse the County. The entire system is vulnerable to disruption by earthquakes. Approximately half of the system could generate flooding from a break. IID has adopted the Disaster Readiness Standard Operating Procedure to respond to earthquakes and other emergencies.

A number of the communities in the County are provided sewer service by municipal districts. Earthquakes can rupture line and affect lift station operations. These problems are not considered serious. Unless the seismic event totally disables the treatment plant, sewage can be transported using alternative means such as portable pumps and lines. In the event of a complete plant failure, temporary evaporation ponds could be utilized for the interim repair period.

Transportation. The County is well served by a variety of transportation routes which are unlikely to be so extensively damaged by a natural disaster as to endanger the public safety due to disruption of lifelines. Interstate 8 to San Diego County is potentially the most critical because it goes through mountainous terrain. No other convenient surface route to the metropolitan San Diego area exists. The Southern Pacific Railroad line along the east side of the Salton Sea is also endangered by its proximity to the San Andreas Fault. Severe damage to either of these facilities is likely to significantly impact local and interstate commerce, but not substantially threaten public safety.

Communications. The telephone system in the County is the most elaborate communication network in the country. The equipment and facilities can withstand earthquakes up to 8.0 on the Richter scale. An Emergency Preparedness Plan has been developed by the telephone company. The telephone network is designed to service sixty percent of the customers requesting dial tone.

The telephone system was not damaged by the 1979 earthquake, but was overloaded with attempted phone calls within minutes of the earthquake and remained essentially inoperative for up to 18 hours in parts of the County. There is a high probability that the telephone system would be significantly dysfunctional following a major earthquake. The Countywide Communication

Plan was adopted in 1980 and provides direction for communication via the various radio networks when there are no telephone capabilities. Due to problems with the telephone system immediately after the 1979 earthquake, the IID installed its own in-house telephone system that utilizes a microwave system. The microwave towers have been designed to withstand the most severe earthquake.

Critical Facilities. This refers to site specific facilities that serve to maintain the health, safety, and general welfare of the public. Critical facilities can serve the public under normal circumstances (e.g., hospitals, fire stations, water reservoirs, and power plants) or under emergency circumstances (e.g., emergency operating centers, armories, or disaster supply warehouses). The "Imperial County Emergency Plan" provides specific details on functional, organizational, and operational concepts and procedures for the provision of critical services during an emergency. This includes overall management of emergency operations, fire and rescue, law enforcement and traffic control, medical, public health, coroner, care and shelter, evacuation movement, construction and engineering, and resources and support operations.

F. Disaster Preparedness

The "Imperial County Emergency Plan" also addresses Imperial County's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and nuclear defense operations. The plan does not apply to normal day-to-day emergencies and the routine procedures used in coping with such emergencies. Instead, the operational concepts in the Emergency Plan focus on potential large-scale disasters that can generate unique situations requiring unusual responses. Such disasters pose major threats to life and property and can impact the well-being of large numbers of people. The Emergency Plan also identifies the sources of outside support which might be provided by other jurisdictions, state and federal agencies, and the private sector through mutual aid and specific statutory authorities.

III. GOALS AND OBJECTIVES

A. Preface

The Seismic and Public Safety Element of the General Plan is to be consulted in the implementation of development policies and land uses in Imperial County. This section (Chapter III) of the Seismic and Public Safety Element presents Imperial County's Goals and Objectives relative to all land use decisions within the unincorporated areas of the County. They have been prepared in collaboration with the General Plan Ad-Hoc Advisory Committee appointed by the Board of Supervisors.

The Goals and Objectives, together with the Implementation Programs and Policies in Chapter IV, are the statements that shall provide direction for private development as well as government actions and programs. Imperial County's Goals and Objectives are intended to serve as long-term principles and policy statements representing ideals which have been determined by the citizens as being desirable and deserving of community time and resources to achieve. These Goals and Objectives, therefore, are important guidelines for public safety decision making. It is recognized, however, that other social, economic, environmental, and legal considerations are involved in land use decisions and that these Goals and Objectives, and those of the other General Plan Elements, should be used as guidelines but not doctrines.

B. Goals and Objectives

Land Use Planning and Public Safety

Goal 1: Include public health and safety considerations in land use planning.

Objective 1.1 Ensure that data on geological hazards is incorporated into the land use review process, and future development process.

Objective 1.2 Regulate development within flood-way areas in accordance with Federal Emergency Management Agency (FEMA).

Objective 1.3 Regulate development adjacent to or near all mineral deposits and geothermal operations.

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.

Objective 1.5 Encourage other governmental agencies and the private sector to pursue an objective similar to Objective 1.4.

Objective 1.6 Ensure environmental hazards are considered when siting critical facilities.
Objective 1.7 Require developers to provide information related to geologic and seismic hazards when siting a proposed project.

Objective 1.8 Reduce fire hazards by the design of new developments.

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.

Objective 1.10 Encourage underground pipelining of all open canals adjacent to and within urban areas to prevent accidental drownings, without placing unreasonable cost burden on agricultural water users.

Objective 1.11 Recognize that certain lands are unsuitable for high density development and that prohibition or restriction of such high density uses are in the public interest, health, and safety.

Emergency Preparedness

Goal 2: 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 2.1 Ensure the adequacy of existing emergency preparedness and evacuation plans to deal with identified hazards and potential emergencies.

Objective 2.2 Reduce risk and damage due to seismic hazards by appropriate regulation.

Objective 2.3 Identify potential risk and damage due to inundation from dam failure and/or water releases.

Objective 2.4 Support and assist in informing the public and other agencies of the hazards and risks of earthquakes and of techniques to employ to reduce those hazards.

Objective 2.5 Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.

Objective 2.6 Maintain, utilize, and provide geologic and seismic information as furnished by the State Geologist as required.

Objective 2.7 When appropriate situations are identified, require rehabilitation of buildings that pose a public hazard due to inadequate seismic design, or presents a structural hazard.

Objective 2.8 Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards including flooding, land subsidence, earthquakes, other geologic phenomena, levee or dam failure, urban and wildland fires and building collapse by appropriate planning and emergency measures.

Objective 2.9 Reduce vehicle accidents through appropriate standards.

Objective 2.10 Reduce the risk of damage due to subsidence resulting from extraction of groundwater and geothermal resources by appropriate regulation.

Control Hazardous Materials

Goal 3: Protect the public from exposure to hazardous materials and wastes.

Objective 3.1 Discourage the transporting of hazardous materials/waste near or through residential areas and critical facilities.

Objective 3.2 Minimize the possibility of hazardous materials/waste spills.

Objective 3.3 Discourage incompatible development adjacent to sites and facilities for the production, storage, disposal, and transport of hazardous materials/waste as identified in the County General Plan and other regulations.

Objective 3.4 Adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

C. Relationship to Other General Plan Elements

The Seismic and Public Safety Policy Matrix (Table 2) identifies the relationship between the Seismic and Public Safety Element Goals and Objectives to other Elements of the Imperial County General Plan. The Issue Area identifies the broader goals of the Element and the "Xs" identify that related objectives are contained in the corresponding Elements.

TABLE 2 SEISMIC AND PUBLIC SAFETY ELEMENT POLICY MATRIX								
Issue Area	**Land Use**	**Housing**	**Circulation**	**Noise**	**Agricultural**	**Open Space Conservation**	**Geothermal**	**Water**
Land Use Planning	X	X	X			X	X	
Emergency Preparedness	X						X	
Hazardous Materials	X		X					X

IV. IMPLEMENTATION PROGRAMS AND POLICIES

A. Preface

This Chapter provides an implementation program to reduce the threat of seismic and public safety hazards within the unincorporated areas of the County. The natural hazards discussed in this Chapter are relative to Imperial County's geography, geology and flooding and is divided into three major topics: Seismic/Geological Hazards; Flood Hazards; and Imperial Irrigation District Lifelines.

B. Programs and Policies

Seismic/Geologic Hazards

1. Implement codified ordinances and procedures which require the review and restriction of land use due to possible natural hazards.

2. Monitor, evaluate, and analyze existing seismic and geological data as it pertains to Imperial County to determine future regulations and programs.

3. Implement the geologic hazards section of the County's Codified Ordinances pursuant to the requirements of the Alquist - Priolo Geologic Hazards Zone Act.

4. Ensure that no structure for human occupancy, other than one-story wood frame structures, shall be permitted within fifty feet of an active fault trace as designated on maps compiled by the State Geologist under the Alquist - Priolo Geologist Hazards Zone Act.

5. The County should require suppliers of all existing utilities which cross active faults to file with the County an operation plan describing the probable effects of failures at the fault and the various emergency facilities and procedures which exist to assure that failure does not threaten public safety.

6. Ensure that proposed highway construction which falls within an Alquist - Priolo Act Special Studies Zone shall be reviewed to ensure that grade-separated interchange structures are not located on or near an active fault.

7. Periodically update maps of existing faults, slide areas, and other geographically unstable areas in the unincorporated area of the County.

8. Support the safety awareness efforts of the Office of Emergency Services of Imperial County and other agencies through public information and educational activities.

9. Continue to implement the Alquist - Priolo requirements in designated special study zones in the Imperial County Ordinance.

Flood Hazards

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 Irrigation District Lifelines

Imperial Irrigation District has a formal Disaster Readiness Standard Operating Procedure for the Water Department, Power Department, and the entire District staff for response to earthquakes and other emergencies. The general policy for the Water Department is as follows:

1. Cooperate with the Imperial County Office of Emergency Service.

2. Lower the level in canals after a need has been determined, and only to the extent necessary.

3. If the need arises, divert the entire flow of the All American Canal at Pilot Knob back into the Colorado River; and divert the remaining water into the Alamo and at the New River where the canal crosses those rivers.

4. Routinely hold water in many of the canals by check gates to maintain availability for domestic uses. This would also be available for fire fighting

APPENDIX A

SEISMIC SAFETY TECHNICAL REPORT

INTRODUCTION

In terms of seismic activities, Imperial County is similar to most regions bordering the Pacific Ocean. It is an area of high seismic activity. Most of the seismic activity is in the Salton Trough (Imperial Valley) consequently, the Valley is subject to potentially destructive and devastating earthquakes. (Imperial Valley in this instance, encompasses the central area, commonly known as the "irrigated" area.)

Earthquakes, are the result of an abrupt release of energy stored in the earth. This energy is generated from the forces which cause the continents to change their relative position on the earth's surface. This process is called "plate tectonics."

The earth's outer shell is composed of a number of relatively rigid plates which move slowly over the comparatively fluid molten layer below. The boundaries between plates are where the more active geologic processes take place. Earthquakes are an incidental product of these processes.

California rests on the boundary between the North American Plate and the Pacific Plate. The San Andreas Fault system is located where the northwesterly drifting Pacific Plate grinds along and is subducted by the southwesterly drifting North American Plate. Baja, and California west of the fault system, are part of the Pacific Plate and move northwest compared to the rest of California and North America. The relative motion is two inches per year, but the plates do not slide easily past each other as they do over the molten layer below. They stick until the strain exceeds the elastic capacity of the rock which then fractures and allows the sudden movement which is an earthquake.

When sudden movement ruptures the earth's surface, it causes vibrations called seismic waves. Complex methods and equipment have been developed to measure earthquakes. Magnitude is a measurement of the energy released. Intensity is a measurement of the damage done. Earthquake prediction methods have been developed, but at this time it is not possible to tell when or where a quake will occur with any reliability.

Effect of Earthquakes

The principal seismic hazards in Imperial County are (1) ground shaking including differential ground settlement, soil liquefaction, rock and mudslides, ground lurching, and avalanches; (2) ground displacement along the fault; (3) floods from dam and levee failure, and seiches; (4) fires; and (5) the various adverse results of disruption of essential facilities and systems - water, sewer, gas, electricity, transportation, and communication (and notably in Imperial Valley, the irrigation and drainage system).[i]

Ground shaking is by far the most important hazard. However, many people believe that fault displacement is the greatest danger. In accordance with the Alquist - Priolo Special Studies Zone Act (Chapter 7.5, Division 2, Public Resources Code, State of California, effective May 4, 1975) the Office of State Geologist delineated Special Study Zones which encompass potentially and recently active traces of four major faults (San Andreas, Calaveras, Hayward and San Jacinto). These Special Study Zone Maps depicting active fault traces are available for public review at the Imperial County Planning Department and the Imperial County Public Works Department. The Alquist - Priolo Special Study Zone Act is enforced by the County to assure that homes, offices, hospitals, public buildings, and other structures for human occupancy which are built on or near active faults, or if built within special study areas, are designed and constructed in compliance with the County of Imperial Codified Ordinance.

An earthquake is the release of force built up by plate stress and triggered by some action; therefore an earthquake is the triggering event to permit the force of gravity to operate. Rockslides, mudslides, avalanches, slope slumping, and ground settlement illustrate this. Water saturated, sandy and fine grained soils subjected to vibrations may lose their shear strength, take on a liquid character, and fail to support structures (liquefaction). Buildings may "sink" into the soil; lighter structures may be buoyed up.

Seiches are earthquake generated waves in small bodies of water. Although there are no records of seiches in the Salton Sea, the following account from the Owens Valley quake of 1872 is instructive: "A huge wave developed in Owen Lake... the water (was) drawn away from the shore and standing in a perpendicular wall... But the return was fairly gentle so only 200 feet of new ground was covered by the waves."[ii]

Floods from dam failure are a notable secondary effect of earthquakes. Often, in earthquake country, the most economical (and sometimes only) dam site is in a high risk seismic zone. The geological forces generating faults often produce the topographic features desirable for dams. Earthfill dams are obviously more susceptible to seismic induced failure than concrete or other structural dams.

In Imperial County, there are three major dams - Imperial, Laguna, and Senator Wash, located on the Colorado River; and in the irrigated area, several large, earthfill impoundment reservoirs; hundreds of miles of above ground level earth levee canals, and hundreds of check dams, drops and gates. The Colorado River is not a known seismically active zone and, to date, there have been no reported cases of earthquake damage to the dams there. Within the irrigated area, there have been a number of instances of levee failure from earthquakes and resultant flooding. Because of the comparatively small volumes of water involved, low head, variety of options to check or divert flows in the canals, and the ubiquitous drainage network, the flooding hazard is not great. Nevertheless, some hazard does exist and even minor flooding could be an incremental contribution to the other disruptions an earthquake might cause.

Effects on Structures

Five main factors effect building damage from earthquakes are:

1. The strength of earthquake waves. For record purposes, accelerations over 0.1g are considered "strong shaking" although this level generally does not produce significant damage. Imperial County's two largest quakes; 1940 and 1979, produced .22g vertical, .36g horizontal, and .38g vertical, .40g horizontal, respectively, as measured at El Centro.[iii]

2. The frequency of the waves. Ordinary structures respond mainly to shaking at frequencies higher than 1 Hz (1 cycle per second). These occur out to a maximum of about 20 miles from the epicenter. However, large structures such as large bridges, and/or high-rise buildings respond to frequencies as long as 10 Hz. These may be significant as much as 60 miles away.

3. The duration of the shaking. It is the cumulative effect of the shaking -- not the single pulse -- that affects structures and causes their collapse. Each shake can weaken part of the structure. Subsequent oscillations further weaken the structure especially if magnified by the resonance of the natural frequency of the structure with the frequency of the waves.

   Relating strength and duration, it is the "repeatable high ground acceleration (RHGA)" as opposed to the peak ground acceleration that is the main criterion in designing structures to be safe from ground shaking impacts. In this respect, aftershocks also play an important role. They frequently produce substantial damage to buildings weakened by the main shock sequence. The Kern County quake of July 21, 1952 had a magnitude of 7.3. However, most of the actual damage occurred a month later when an ordinarily mild 5.8 aftershock brought down the already weakened buildings.

4. The geologic foundation. Engineers and insurance companies often consider this the most important factor in building damage. Fill and "made" land, especially when saturated, transmits much greater intensity of motion than solid rock even when both are subjected to the same seismic waves. The greater stress on the structure, as well as the possibility of liquefaction, differential settlement, or slope failure, make a poor geological foundation and create a double jeopardy in earthquakes.

5. The building design. Where subjected to the effects of a major event, an "earthquake proof" building may, at least with current technology be impossible to design. Architects and engineers know how to design earthquake resistant structures.

Buildings traditionally are designed first to resist the force of gravity. The traditional building techniques and materials are very good for this: post and beam, bricks, concrete. The loads are very easy to calculate and to design for; "dead load" representing the weight of the building itself, and the "live load" representing the contents of the building, wind, people, furniture, goods, etc. All of these are static and dynamic forces acting in the vertical plane. Often, in older buildings the main

force holding the building together is the force of gravity itself - the upper parts pressing down on the lower parts.

When an earthquake occurs, it introduces vertical and horizontal dynamic forces. Newer buildings generally have reasonably large margins of safety designed into them to withstand the constant pull of gravity. Therefore they generally withstand vertical seismic accelerations reasonably well. However, horizontal accelerations and sudden rapid vertical acceleration are what cause the major damage.

During an earthquake, buildings usually fail at the location where their various parts are joined together. Weakened structural sections are then affected by gravity which then may cause them to collapse. The majority of buildings usually "pancake". They seldom fall or roll over. Because there are so many factors that affect the structural integrity of a building, it is possible to have two identical buildings exhibit substantially different results in an earthquake.

The second consideration in traditional building safety design is against fire (also a major secondary effect from earthquakes). Here too, the most resistant materials are stone, bricks, concrete, etc. As buildings became larger, and safer in their resistance to gravity and fire, and to weathering and wind, they become more massive and have greater inertia. Like the damaging seismic forces, wind is dynamic and also acts horizontally. Most of the wind resisting design techniques also resist earthquakes. However, whereas the inertia of massive buildings works positively to help resist horizontal wind forces, it can be detrimental in withstanding horizontal earthquake accelerations.

"Rigid Strength" buildings tend to hold together well with little or no damage from quakes up to the point at which some part fails and then the whole building may come apart... To design "rigid strength" to withstand the greatest expected quakes may require bulk and costs that would prevent the building from ever being built in the first place. There are numerous architectural designs that have been implemented across the world to minimize earthquake damage, such as massive shock absorbers, counter balance weights, floating support systems, etc. Unfortunately most of these solutions are only practical in very large and expensive structures.

The alternative to "rigid strength" is flexibility. Wood (in small buildings), and especially steel, permits construction that will bend and deform, and allow the energy of the earth movements to pass through the building rather than try to resist and absorb the energy. Flexibility permits the construction of buildings which are lighter, freer in design, much less costly, and which still won't completely fail under very large quakes. Wood has both tensile and compressive strength. It is usually readily available, is easy to work and assemble, and is thus both a popular and a fairly good earthquake resistant building material. Its notable failing is at the joints. Where bolts and screws, in addition to nails are combined with steel straps and "strong ties", and plywood is used for shear walls and horizontal diaphragms, quite excellent "flexible strength" can be built into wooden structures up to three stories high. Larger than this, the weight of the structure begins to exceed the "cost effective strength" of the lower floor wooden supports. Since flexible designs do permit various parts of a

structure to move in relation to its other parts, damage such as cracked tile and plaster, shattered windows, and broken pipes, may occur from moderate quakes.

Because earthquakes involve dynamic oscillations, building design can also influence its reaction to a quake in ways not expected solely on the basis of strength to accommodate applied force. All things, including buildings, have a natural frequency at which they oscillate. If this natural frequency matches that of the passing seismic waves, the building oscillations may build up to a much greater amplitude than would otherwise occur.

Buildings with irregular layouts or abrupt changes in structural materials have been shown to suffer more earthquake damage than other buildings with the same "strength". Particularly vulnerable are buildings with mixed rigidity and flexibility. A classic example is the house in which a wall opening has been enlarged to install bigger windows. That wall now is weaker, but also more flexible than its opposite wall counterpart. In a quake, most of the load previously carried by both walls, will be absorbed by the stronger, stiffer wall, and it may fail while the weaker, more flexible wall, remains intact.[iv]

An aspect of building design is building orientation. In Imperial County, faults all trend northwest to southeast and fault movement is mostly strike slip. The waves from an earthquake can be expected to be stronger in the northwest/southeast direction. Wise residents in earthquake country are known to take such basic precautions as anchoring furniture, water heaters, and breakables such as china cabinets, in order to diminish hazards. Architects and engineers can apply this knowledge of predominant seismic wave orientation to building and site design.

The foregoing discussion on building design is not meant to suggest design alternatives, as much as to illustrate the necessity to think in terms of "trade offs" and cost versus risk. We cannot prevent earthquakes. We can build resistant characteristics into structures and avoid building those which are particularly susceptible to the effects of earthquakes.

Seiches

"A seiche is a to and from vibration of a body of water in its own natural tempo like the slopping of water in a jolted basin. Once started, the water body will continue to oscillate independently with its own proper period. Seismic sea waves are only one of the many causes of seiches which often occur also in lakes and ponds."[v]

While there have been a number of seismic events since the formation of the Salton Sea, to date seiches have not occurred to any significant recorded magnitude. There is, however, no guarantee that under specific circumstances one could not occur.

Although "the San Andreas Fault is known to be quite active in the Salton - Imperial Basin, it is difficult to define and almost impossible to trace."[vi] In addition to the San Andreas fault, the San Jacinto Fault lies west of the Salton Basin and, on the east side of the Salton Sea, another fault trace is recognizable near Durmid, where

sandstone and shale beds on the southwest side of the fault have been opened and contorted near the fault.[vii]

Nevertheless, it is reasonable to believe that close proximity of these faults to the Salton Basin implies that the Salton - Imperial Basin could be subjected to an occurrence of significant seismic ground shaking in the future, thus, possibly inducing a seiche.

SEISMIC HISTORY IN IMPERIAL VALLEY

Reliable accounting of earthquakes began around the turn of the century when Imperial County became inhabited. What evidence exists, suggests that earlier seismic activity was similar to recent activity. Generally only events of intensity V or greater are included here.

The following accounts, (through 1970), are taken largely from *An Earthquake History of the United States* by the U.S. Department of Commerce. The accounts for after 1970 are compiled from a variety of sources, all listed in the reference section.

1853 November. Based on reported effects in distant towns, a large earthquake is believed to have occurred in the northern Salton Trough, probably in the Imperial Valley. A magnitude of 6.5 is estimated for this event.

1853 December. Fort Yuma. Many shocks. Possibly of destructive force.

1868 May. Los Palmas, east and north of Salton Sea. One source states that a long fissure opened in the earth. (If this is true, the intensity was IX, perhaps X).

1871 (Month Unknown). Imperial Valley. Halfway between Los Palmas and Yuma, the shock rolled men over who were sleeping on the ground.

1877 June 11. Imperial County. Violent vibrations preceded volcanic eruption in the mountains near Flowing Well Station, about 60 miles northeast of Yuma.

1892 February 23. Northern Baja California. The intensity of this shock probably reached X near the epicenter, which was apparently in the uninhabited region of northern Baja California. It was felt strongly along the Pacific coast of Baja California, as far as San Quentin, Mexico and as far north as Vislia, California. At Carrizo, all adobe buildings were destroyed; at Jamul, walls of stone kilns cracked. At Campo, there were 155 shocks in 12 hours. After shocks were numerous for several days.

1903 January 23. Baja California. A strong earthquake, centering in the uninhabited region south of Imperial Valley, was felt throughout southern California, southern Nevada, and western Arizona. A similar shock under present conditions in the Imperial Valley would cause damage. Recorded by distant seismographs. Magnitude 7+.

1906 March 3. Southern California. Felt widely in southern California. Origin south of border. Recorded by distant seismographs, which indicates moderately destructive power.

1906 April 18. Brawley, Imperial Valley. Chimneys fell. Banks of New River caved in; water tanks destroyed at Cocopah in Baja California. The published information is very limited, but H. O. Wood, on the basis of verbal information, reported this to be a very severe shock. Magnitude 6+. It came just hours after the great San Francisco quake and most probably was related.

1915 June 22. El Centro, Calexico, and Mexicali. Two destructive shocks, nearly 1 hour apart. Heavy damage (about $900,000) in southern Imperial Valley was caused as much by poor quality buildings as by the intensity of shock. In El Centro, well constructed buildings merely suffered cracks. At Mexicali, Mexico, people returned to buildings after the first shock; six were killed and many were injured by the second earthquake. Though a few cracks were formed in the alluvium, the irrigation ditches and works were damaged very little. The unstable banks of the New and Alamo Rivers slid down in many places. Several farmers observed that after the shocks, one-third more water was required for irrigation because of the cracks in the soil. Despite the rather high local intensity, the total energy was moderate. Magnitude 6 1/4 for both shocks.

1915 November 20. Baja California. A shock, revealed by seismograms to have been considerably greater than that of June 22, occurred in the Volcano Lake region south of the Mexican boundary. In the Imperial Valley, the highest intensity was at Calexico; at Volcano Lake, levees and damp ground were cracked. Magnitude 7.1.

1917 May 27. Imperial Valley. Seems to have been most severe in open country. Walls were reported cracked at Brawley.

1918 April 30. Calexico, Plate glass broke. Felt over an area of about 100 mile radius.

1919 September 29. Baja California. Levees slumped and many longitudinal cracks were formed in the Volcano Lake region south of Imperial Valley. Reported intensity distribution suggests that more than one shock occurred. A few fore shocks and numerous after shocks.

1919 October 1. Baja California. A shock similar in location and energy to that of September 29.

1921 September 8. South of Imperial Valley. Duration at Calexico 30 seconds, than a second shock of same duration. Felt over a large area; probably of destructive intensity in the epicenter area.

1923 November 5. Calexico. The epicenter was probably near Calexico where a hotel shifted several inches on its foundation and other buildings sustained minor damage. Intensity was about the same at El Centro.

1923 November 7. Baja California. Intensity VII at Calexico. Damage caused by the shock of November 5 was increased, and one fire resulted. A stronger shock than that of November 5. Epicenter appears to have been in Baja California, south of Calexico.

1925 April 15. Calexico. Plaster was shaken from walls; inhabitants fled to the streets. Again, the epicenter probably was a short distance south of the border.

1926 April 19. Baja California. Volcano Lake region. Light at Calexico, duration 20 seconds. Seismograms indicate energy sufficient to be destructive over a small area. Felt as far as San Diego.

1927 January 1. Imperial Valley, near Mexican border. Two heavy shocks about an hour apart began a long earthquake series, though none of the latter exceeded VI in intensity. In Calexico and Mexicali many buildings were damaged, water mains broke, and some fires ignited. Between 15 and 20 persons were injured. At Heber, El Centro, and Imperial, slight damage was reported. At Heber, telephone service was interrupted. Magnitude 5 3/4 and 5 1/2, respectively. The after shock of February 12, 00:59, was farther north and was felt as strongly at Brawley as the main shocks. Hundreds of aftershocks occurred.

1930 February 25. Imperial Valley. At Westmorland, walls cracked, chimneys toppled and inferior buildings were damaged. Mud craterlets were found a few miles east of Westmorland. Several fore shocks and many after shocks. Magnitude 5.0.

1930 March 1. Imperial Valley. This shock was of smaller magnitude than that of February 25. At Brawley, brick buildings were damaged, chimneys were thrown down, and plate glass shattered. Structural damage included falling of cornice sand walls, severe cracks in walls, and displacement of roofs. Well-constructed buildings sustained little damage. Magnitude 4.5.

1934 December 30 and 31. South of Calexico. Two separate main events, the first, magnitude 6.5 and the second 7.1. It is difficult to determine which event caused what damage. Railroad bridges were damaged and tracks twisted. Surface cracks appeared. Water sprouted in dry river beds. Adobe houses were wrecked and a large water tower was thrown down. Irrigation ditches were damaged, roads buckled and communication systems disrupted. It was felt strongly in Tijuana. Chimneys and walls were thrown down at Calipatria. Intensities XI and X in Baja, VI and VII in Imperial Valley.

1940 May 18. Imperial Valley. Sixty thousand square miles affected in the United States (including Arizona and Nevada) and an unknown area in Mexico. The epicenter was located southeast of El Centro, but there was surface slipping with surface rupture over a known distance of 40 miles. The existence of the Imperial Fault was revealed for the first time. The horizontal displacement reached 19 feet near the border. Vertical displacements up to 4 feet were observed. There was damage at all towns in the Imperial Valley and canals were damaged with serious interruption to water service.

The Alamo Canal (still in use) was opened by the displacement causing a local flood south of the border.

At Imperial, the city water tanks collapsed and 80% of the buildings were damaged. At the more heavily populated town of Brawley, there was greater total damage but less percentage of loss. Possibly 40% of the buildings were damaged, but the percentage was higher in business buildings.

At Holtville, the city's water tank collapsed, but the damage was not great. Damage at Calexico and at Mexicali, Mexico was not as extensive as might have been expected. The principle loss in Mexicali was fire set by a short circuit.

Indirect loss of crops was considerable; direct earthquake loss in the United States was 6 million dollars. Nine lives were loss. Magnitude 7.1, intensity X.

Again, the rest of the decade was relatively quiet. There were eight quakes of magnitude 5 or greater in the area. Six of these came in 1942, with five of these on October 21-22. A landslide damage the SD&AE railroad bridge in Carrizo Gorge and some cracked plaster was reported throughout the Imperial Valley. A 5.4 event centered south of Borrego, January 8, 1946, caused no damage.

1950 July 29. Imperial Valley. Strongest of the series of shocks centering near Calipatria on July 27, 28 and 29. Fifty thousand dollars in damage resulted, chiefly from merchandise being thrown from the shelves in the Calipatria, Westmorland, and Niland areas. In Calipatria, concrete standpipes broke and a small railroad bridge shifted six to eight inches. There was considerable plaster damage. In the outskirts, sand boils appeared and irrigation ditch banks sloughed. In Westmorland, reinforced concrete walls of the post office building cracked and window broke at the City Hall and at the Food Center Building. Also felt at Parker and Yuma, Arizona. Magnitude 5.4. A 4.7 aftershock August 1, caused sand boils and ground fissures around the North End Dam.

1951 January 23. Near Calipatria, cracked Westside Main canal. Magnitude 5.6, intensity VII.

1953 June 13-13. Brawley-Westmorland area. Landslides at Tamarack Road and the New River. Windows broken and plaster cracked. First event and aftershock of 5.5, intensity VII.

1954 November 12. A 6.3 event in Baja was strongly felt in the Imperial Valley.

1955 December 16. Brawley area, magnitude 5.4, intensity VII.

1957 April 25. South end of Salton Sea slight damage in El Centro, Brawley and Westmorland, magnitude 5.2, intensity VII.

1958 November 30. Main shock of a series caused minor damage at Calexico and Seeley. Magnitude 5.8, intensity VII.

1963 June 11. A 5.8 event in Baja was felt widely in Imperial Valley.

1965 June 15. A 4.5 main event in a series. Slight damage to buildings, broken windows, and "residents alarmed" in Brawley and Westmorland.

The history of seismic events is also a history of improvements in recording earthquakes and in understanding of seismic phenomena. Two events at this time are notable more for what they revealed about earthquakes than for damage that occurred.

1966 March 4. Imperial. Magnitude 3.6. This quake caused virtually no damage, but did cause surface rupture and horizontal displacement. It is the smallest known earthquake to do so. (Some authorities question these effects.)

1968 April 9. South of Ocotillo Wells. The main shock of a series was felt over a large area of California, Arizona, and Nevada. Minor ground cracking and displacement occurred on the Coyote Creek Fault, and Highway 78 was cracked and adjacent to Ocotillo Wells. Ground cracking, minor building damage, and power disruption occurred in some areas of Imperial Valley. A 200-foot long, 2 inch wide crack occurred in a road 6 miles west of Imperial. Minor damage was also sustained at Calexico, El Centro, Los Angeles, San Diego, and Yuma Arizona. Magnitude 6.5. Intensity VII. Later an aftershock of magnitude 5.2 was widely felt. The significant feature of this earthquake was the triggering of minor ground ruptures on neighboring Superstition Hills Fault, Imperial Fault, and the Banning Mission Creek portion of the San Andreas Fault. A 4.7 aftershock at Calexico knocked down plaster. A 4.4 event, listed as an aftershock, occurred at Salton City on May 22.

1969 May 19. A 4.5 quake near Borrego Springs was felt in San Diego, Riverside and Imperial Counties. There was no damage.

1971 September 30. Superstition Hills area, magnitude 5.1. No known effects.

1975 January 23-25. Eight events from 4.0 to 4.8 in the Brawley are. The smallest, on January 23 was assigned the highest intensity VII, but there was no significant damage recorded.

1975 June 20. Two events at Mexicali of 4.1 and 4.2.

1976 November 4. Eight events from 4.0 to 4.9 in the Calipatria area with no recorded significant effect.

1977 October 20 to November 14. Eight events from 4.0 to 4.3 southeast of El Centro, but with no recorded damage or effects.

Seismic activity from 1940 to 1979 was characterized by "earthquake swarms" with little or no damage. These were in addition to and sometimes associated with the individual events and series of events listed above. They occurred in 1950, 1955, 1966, 1973, 1975 and 1976. For example, eighty-two separate tremors were reported felt in Brawley between December 16 and 20, 1955. The 1975 Brawley

swarm was studied in detail by C.E. Johnson and revealed complex interaction between the Brawley and Imperial Faults. These "swarms" were composed of dozens, and sometimes hundreds, of events in the range of 2.0 to 4.0.

Seismic monitoring arrays installed by Chevron and Union Geothermal Companies, to assist in their exploration of the geothermal reservoirs and to determine what effects their operations might cause, have semitivities of 1.0 Richter magnitude. They frequently reveal hundreds of events daily. There is no easy way to tell if these "swarms" and "microseismicity" (events less than 2.0 Richter magnitude) are normal to the Valley and not recorded in earlier years, or are a change in the normal pattern.

1979 October 15. The earthquake occurred at 4:16 p.m. (PDT). The epicenter was on the Imperial Fault approximately 12 miles south of the Mexican border and 12 miles east of Mexicali. It was widely felt throughout Southern California, and was assigned a magnitude of 6.6 ML (Richter). Two aftershocks of 5.0 or greater occurred by 9:00 p.m.

Approximately 100 persons were reported injured; two were hospitalized. The six story County Services Building, the largest building ever built in Imperial County, suffered the most notable damage resulting in its subsequent demolition and total loss. It was occupied by 400 persons at the time of the quake. None were seriously injured. Commercial damage was widespread, particularly in the older sections of Imperial, Calexico, Brawley, El Centro, and Mexicali. Sixty percent of the commercial buildings in Imperial were subsequently condemned. Windows and bottle goods were the major loss. One hundred and three mobile home units in El Centro were knocked from their piers, Throughout the quake area (in Imperial County) two homes were destroyed and 1,565 damaged. Broken windows, cracked plaster, and collapsed brick chimneys were typical.

One 30,000 gallon gasoline tank (among 18 at the Santa Fe Pacific Tank Farm at Aten and Clark Roads) were ruptured and began leaking 100 gallons per minute. It was controlled by the next morning. All roads within one mile were closed and ten families in the area were evacuated.

There were 15 ruptures of water mains in El Centro and a temporary loss of ninety percent of the fire fighting capability. The Southern Pacific Railroad tracks were offset nine inches where they cross the Imperial Fault. Traffic was halted for 30 hours. Interstate 8, Routes 98 and 80 were damaged where they crossed the fault. The New River Bridge west of Brawley suffered serious damage by an aftershock about midnight. The west end of Runway 26 at the Naval Air Facility settled. The runway was closed 62 days for repairs. Sewage treatment plants in El Centro, Brawley, and Imperial were seriously disrupted. Clarifiers at all three were knocked out, pumps at Imperial were misaligned and subsequently burned out, and miscellaneous other damage occurred. All exceeded their holding capacity and dumped raw sewage into the drainage system. Normal service was not restored for from 2 to 6 months. Estimates of sewer main ruptures have never been summarized.

The All American Canal suffered major slumping to its embankments on both sides for an eight mile stretch in the vicinity of the Imperial Fault. There were extensive slope failures in many of the other canals. The IID immediately reduced flow to about fifteen percent and later shut the entire irrigation system down for several days for inspection and repairs. (Although media accounts, and the "staff report" state this, the system never was completely "shut down".) There was extensive drainage tile damage in fields crossed by the fault.

Electrical power was out in parts of the Valley for 3 to 4 hours. Several key emergency generators failed to function - one for the County fire station and control tower at the Imperial Airport and another at a local hospital. All hospitals remained otherwise functional with only minor damage. Students were not in class at the time of the quake. Schools remained closed the following day to assess damage. It was all non-structural -- estimated at $345,000, "County-wide". Telephone and telegraph facilities were undamaged, but became inoperative due to overload of attempted calls for up to 18 hours in certain areas. This seriously interfered with emergency analysis and response. Local radio and television (including designated Emergency Broadcast Station) were off the air for about an hour. Total loss was estimated at $30,000,000.

1981 April 27. Westmorland. Magnitude 5.6 Intensity VII. There was more damage to Westmorland than resulted from the October 1979 quake. Several commercial buildings and 16 homes were substantially damaged. The water tower, and the water and sewage treatment plants received $500,000 damage. A quarter mile of the concrete lined Vail Canal was broken up. An eight inch crack opened in Lack Road. There were no injuries, nor significant damage reported elsewhere in the valley.

The swarm of thirty quakes (seven between 3.0 and 4.1) occurred over a 12 hour period three days before the main quake. More than three dozen quakes (over 3.0) occurred in the 24 hours afterwards.

This quake apparently ruptured underground gasoline storage tanks, which was revealed months later with fumes and seepage into surface waters.

1985 May 8. An earthquake measuring 5.2 on the Richter Scale, rocked a large uninhabited area of the Mexican desert 65 miles southwest of Calexico, but there were no reports of damage or injuries, authorities said.

The quake was followed by a series of aftershocks, including one that registered 4.3 on the Richter Scale, according to a spokesman for the California Institute of Technology at Pasadena.

1986 July 8. A quake struck 12 miles northwest of Palm Springs measuring 5.9 on the Richter Scale of ground motion. It did an estimated $5.75 million damage and injured 40 people. Numerous aftershocks, some measuring as high as 4.0 on the Richter scale, have jostled the area since then.

1986 July 13. A 5.3 earthquake epicentered 28 miles southwest of Oceanside in the Pacific Ocean. The quake was felt as far away as Yuma, AZ, 160 miles east of San Diego, but caused no reported damage or injuries in Imperial Valley.

1987 February 6. A strong earthquake shattered windows and disrupted power in Mexicali and briefly interrupted phone service in the Imperial Valley but there were no reported injuries, authorities said. The trembler registered 5.6 on the Richter Scale and was centered 19 miles southeast of Mexicali according to a spokesman of Caltech in Pasadena.

The quake was felt as far east as Yuma, about 60 miles from the epicenter and as far west as San Diego.

1987 November 23-24. Two strong earthquakes, which registered 6.0 and 6.3 on the Richter Scale, caused widespread damage, but few injuries were reported. The Calexico area was apparently the hardest hit by the trembler, which was centered near Westmorland.

Two bridges, on Forrester Road over the New River and on Worthington Road over the New River were damaged according to the County Public Works Department. The California Highway Patrol also reported that Keystone Road between Forrester and Highway 86 is closed because of bridge damage.

1988 January 25. A large earthquake struck Baja California, Mexico, shaking some Californians awake but triggering no immediate damage reports either north or south of the border, officials said.

The quake registered 5.3 on the Richter Scale was centered in a sparsely populated area about 45 miles east of the resort city of Ensenada according to a spokesman of the California Institute of Technology in Pasadena. The U.S. Geological Survey in Golden, Colorado, measured the quake at 5.0. There were no reports of damage in Imperial County.

ENDNOTES

APPENDIX B

STORAGE SITES, HANDLERS, AND VENDORS OF HAZARDOUS MATERIALS AND WASTE

This report contains a summary of the largest concentrations of hazardous material and the obvious sources of massive leaks or spills in the County of Imperial. Space requirements of this document preclude the listing of every potential source of hazardous material and waste. This type of detailed information may be obtained by contacting the County of Imperial Department of Health Services.

1. Santa Fe Pacific Pipe Line Tank Farm

The Santa Fe Pacific Pipe Line Tank Farm is located at Aten Road and the Southern Pacific Railroad junction in the southeast quadrant of the City of Imperial. This facility is a component of the Santa Fe Pacific Pipe Line network that delivers gasoline, diesel, and jet fuel to Southern California and Arizona. The tank farm contains 16 storage tanks, in varying sizes, with a total storage capacity of approximately ten million gallons.

2. Naval Air Facility (El Centro)

The Naval Air Facility (El Centro) is serviced by a four-inch fuel line directly from the Santa Fe Pacific Pipe Line Tank Farm. Safety devices include manual and automatic shutoff valves, as well as pressure regulators. The facility also stores one million gallons of fuel, which is predominantly jet fuel, in underground tanks. Munitions storage is limited to aircraft and small arms training ammunition.

3. ST Services

ST Services is located south of the Santa Fe Pacific Pipe Line Tank Farm and has the capacity to store 70,000 gallons of fuel.

4. Brea Agricultural Service

Brea Agricultural Service is located at 89 East Main Street in the City of Heber and serves as a chemical and fertilizer storage facility.

5. United Agriculture Products

United Agriculture Products is located at 2415 Clark Street in the City of Imperial. This facility handles hazardous wastes, chemicals, insecticides, and pesticides.

6. Puregro Company

The Puregro Company is located at 10th Street and River Drive in the City of Brawley. This facility handles chemicals and fertilizers.

7. Rockwood Chemical Company

Rockwood Chemical Company is located at 47 West Rutherford Road in Brawley. This facility handles chemical and fertilizers.

8. Helena Chemical Products

Helena Chemical Products is located at 101 East Carey Road in the City of Brawley. This facility handles chemicals, fertilizers, insecticides, and pesticides.

9. Wilbur Ellis Company

The Wilbur Ellis Company is located at 45 West Danenberg Road in the community of Heber. This facility handles chemicals, fertilizers, insecticides, and pesticides.

10. Pipelines

There are 89.92 miles of pipeline in Imperial County that transport hazardous material. Pipe sizes vary in size from 12 to 20 inches and the average size is 12 inches. Pipelines are located adjacent to the Southern Pacific tracks from the Arizona border at Yuma to the Niland tank farm, north to the Riverside County Line, and south to the Imperial tank farm. The pipeline system has section fuel control valves.

Source: 1988 Imperial County Emergency Plan

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i. Robert Iacopi, *Earthquake Country*, (California:Menlo Park, Lane Books, 1976):58-60.

ii. Matthews H. William, *Geology Made Simple*, (New York:Doubleday & Company, Inc., 1982):78.

iii. The World Book Encyclopedia, 1988 Edition, *Flash Flood*, (Chicago:World Book Inc., 1987 F Volume 7):237.

iv. Office of Emergency Services Imperial County, *Imperial County Emergency Plan*, (June 1988):Appendix 1-3, 57.

v. Federal Emergency Agency, *Flood Insurance Study Imperial County, California Unincorporated Areas*, (September 15, 1983):4.

vi. Ibid. p. 4.

vii. Ibid. p. 5.

Attachment 15

Attachment #15 Engineering Report

Attachment # 15

3c

SAFE DRINKING WATER STATE REVOLVING FUND
APPLICANT ENGINEERING REPORT
Construction Funds

Water System Name: Palo Verde County Water District

Project Number: 1 3 0 0 6 1 6 - 0 0 1 C

Principal Contact: Ron Woods, Board President
Name and Title

760-854-3421 rmsron@peoplepc.com
Phone Number and Email Address

Project Engineer: David Dale, PE
Name and Title

760-545-0162
Phone Number and Email Address

C63588
California Civil Engineering License Number

NOTE TO APPLICANT: Please refer to **Part C** of the Fall State Fiscal Year (SFY) 2013-2014 Construction Application Guidelines (Enclosure 2c) for additional guidance on how to complete the following sections.

A. WATER SYSTEM INFORMATION

- Describe the water system and its facilities. Include details relating to source, storage, treatment, and distribution system.

The Palo Verde Water System was first constructed in 1983, consisting of two wells, with a capacity of 250 gpm each, and a pipeline distribution network. There are 142 active connections to the water system. During 1988, a sand filter and a chlorination/potassium permanganate injection system were installed to reduce iron and manganese concentrations in the water. A 20 hp pump supplies water to backwash the filter. The spent backwash water flows into a constructed spent backwash basin. In 2001, two bolted 125,000-gallon ground storage tanks were installed at the treatment plant. A schematic of the treatment plan general layout is attached.

The water treatment facility is located approximately 2 miles south of Palo Verde along State Route 78. Treated water is delivered from the treatment plant through an 8-inch water main located on the east shoulder of SR 78 for the entire two mile stretch. The 8-inch water main on State Route 78 branches into Clark Way, 4th Street, Sunset Way and other streets.

Both water supply wells are located within the treatment plant. Each well has a nominal maximum capacity of 400 gpm and a depth of 70 and 90 feet. The current pumping capacity of the wells is 250gpm. Raw water from the wells is pumped simultaneously through an 8-inch pipeline into the chlorination system to receive pre-chlorination. Potassium permanganate is added to water to oxidize iron and manganese and facilitate their removal through filtration. Water flows to the sand filter system for treatment, and then is chlorinated for disinfection. The filters are backwashed for 4 minutes every 8 hours of operation. Backwash water is pumped to a holding pond for

evaporation.There is a constructed spent backwash basin in the water plant boundary that the backwah water is directed to.

The maximum average daily flow (ADF) is 35,000 gallons per day. The maximum instantaneous flow into the distribution system is 80 gpm. Contact time calculations are based on the design filter rate of 348gpm.

Water is stored in two tanks prior to distribution. Two 125,000 gallon bolted steel tanks are used for storage of treated water and are located at the treatment plant. Water is pumped to and from both tanks simultaneously.

Treated water from the storage tanks is pumped to the distribution system through a booster pump station. The booster pump station was installed in 2008 and consists of five vertical pumps that are controlled by a variable frequency drive (VFD) that changes the speed of the pumps based on demand and keeps the pressure in the system constant.

A standby generator (Kohler 150KW) is available in the case of electrical power failure. The generator, installed in 2008, is in good condition has the capacity to provide power to all the units in the treatment plant, including the existing distribution pumps and lighting system. The generator is tested once a month to identify possible problems with the system. The water plant also employs an array of solar panels for some of its energy requirements.

- Attach a schematic/map of the system which includes the existing facilities as described above.
- Agency that has jurisdiction over the water system

  ☐ CDPH ☒ LPA: County of Imperial Public Helath Department *(list the LPA county)*
- Water Permit status, including the permit number, issue date, and a list of any amendments
  Permit Number: 1300616, issue date: 1/1/2014

B. PROBLEM DESCRIPTION

- Describe the ranked problem being addressed by the project and attach supporting documents to justify the ranking. (Include the last two years of water quality data, most recent compliance orders, violations, citations, etc.)

The District has conducted testing of the treated water for Total Trihalomethanes (TTHM). One way THMs are formed is when organics come into contact with chlorine. The maximum contaminant level (MCL) is 80ppb, and the District water has recently tested over 100ppb in TTHM concentrations. The running annual average was determined to be 97.0 ppb, and a Notice of MCL Exceedance was issued to the Palo Verde County Water District by the local Health Department (LPA) on February 21, 2014 (see attached notice of violation). A problem with high TTHM in treated groundwater is unusual because typically there is a lack of organics in groundwater. The high TTHM is indicative that the surface water may be influencing the groundwater at the plant, or there could be high levels of iron bacteria in the wells. The wells are located very near the Colorado River and have been deemed to be under the influence of surface water by the local Health Department. If

surface water is influencing the wells, the upper casing of wells may have been compromised. It is possible that the casing of well number 1 has cracked due to the observed lack of production and the water table elevation; the lack of production could also be caused by a faulty well pump or a complete collapse of the well casing.

EXISTING WELLS

There are problems with the two existing wells. The location of well sites numbers 1 and 2 are shown in the attached site plan. Well site number 1 (or the south well) has slowed its production over the past year from the initial capacity of 400gpm to approximately 30gpm. This may indicate that the well casing, lining and screen has begun to experience mineral incrustation, corrosion sediment plugging and/or biofouling (accumulation of growth of bacteria). The capacity of well site number 2 (north well) has not yet been compromised to that extent, but the operator has physically reduced the flow from this well due to water quality degradation when flows are greater than 200gpm. The water from well number 2 has been described as "Black" at 200gpm. The sand filters cannot keep up with the amount of iron and manganese at this level. The water quality has been heavy with these pollutants in recent days. Customer complaints regarding water quality have been received by the District. During a recent site visit, it was noted that a sign has been placed at the water office stating that the water has had high concentrations of iron, and that customers should use specific products in order not to harm clothes during washing.

It appears that the wells were also not designed or constructed to municipal water standards. Attached are the water well driller's reports that clearly show that the wells were not intended for public use. The wells will need to be rehabilitated, and the water treatment system upgraded to treat the water to the Surface Water Treatment Rule (SWTR). It appears that the existing filters will be able to treat the water to this standard with some modifications.

There does not appear to be any issues with high Nitrates or Nitrites in the well water. The principal pollutants in the raw water are iron, manganese and organics (and associated trihalomethanes).

EXISTING TANKS

Treated ground water is stored in two 125,000-gallon bolted steel tanks (north and south tanks) built in 2000. A pressure switch on the tank starts and stops the treatment plant wells. Both water storage tanks are deteriorating and the interior of the tanks are extremely corroded. Since the south tank being taken out of service in 2013, the Palo Verde County Water District has had to significantly increase chlorine disinfectant levels to ensure adequate contact time. This has likely led to an increase in TTHM levels in the distribution system.

South Tank
The south tank (125,000 gallon capacity) is currently not in use due to a substantial leak near the bottom of the tank, and it can no longer store treated water. As a result, the north tank is being solely utilized to provide water to the community, but it has insufficient capacity for both public consumption and County Fire Department needs. The operators have since drained the tank and an inspection of the interior of the tank was completed. The rafters are very corroded and will need to be replaced. There will be several areas that require welding to repair severely corroded areas. The seals for the outside metal plates appear to be in poor condition.

North Tank

The north 120,000 gallon tank has begun to shift on the foundation, as evidenced by the fact that the effluent piping has started to twist and move from the original positions. This could be due to the tank leaking on the bottom where it cannot be readily noticed. The interior of the north tank is also corroded and will need to be repaired or replaced.

The tanks are able to be run in series with the existing piping, constructed in 2001.

EXISTING BOOSTER PUMP STATION

The existing Grundfos booster pump station employs five vertical turbine pumps. Two of the three pumps are controlled by a variable frequency drive (VFD). Three of the pumps (25hp) are for peak flow assistance, and are on/off only.

There is a need to replace the pump casings for the pumps installed in 2008. The impellers are constructed of stainless steel and are in good condition. The pump casings, which house the impellers, are constructed of cast iron. The casings are corroding. The cast iron is possibly corroding due to the high chlorine concentrations in the water. It was recommended that the cast iron casings be replaced with stainless steel. The effluent piping of the pump station is composed of stainless steel.

EXISTING WATER TREATMENT SYSTEM

The LPA has determined that the existing water wells are under the influence of surface water. The water system is required to record regular turbidity and chlorine residual readings. The existing system does not employ turbidity or chlorine residual meters and recorders.

The District currently uses a chlorine gas system for chlorination. There are two gas cylinders. This system can increase TTHM due to the lack of proper dosing, presents dangers to the operators and is expensive to operate as compared to a cacium hypochlorite tablet system.

The water treatment system employs one (1) Tonka Equipment Co. iron and manganese pressure filter, installed in 1989. It appears that the filter is in good condition. The filter must be backwashed more often than specified by the manufacturer because of the high solids content of the raw water from the wells. The filter is not able to keep up with the amount of iron and manganese when the north well is operating above 200gpm. When the operator throttles the flow from the north well, the filter is able to remove the iron and manganese to an acceptable level. The filter appears capable of treating the raw water to the Surface Water Treatment Rules. However, it is incapable of removing TTHMs as currently constructed.

C. ALTERNATIVE SOLUTIONS

- Describe each alternative considered to correct the problem described in Section B. Include the feasibility of consolidating with one or more water systems.

EXISTING WELLS

The alternatives for the existing wells are as follows:

(1) Do nothing - The existing wells are showing signs of failure. The south well is down to a production rate of 30 gallons per minute. The production of the north well is down to just over 200

gallons per minute from an initial capacity of 400 gallons per minute (gpm). The north well cannot be operated at 200gpm due to the fact that high solids concentrations occur at this flow rate. If nothing is done to the wells they will continue to degenerate, foul the existing filter, and result in continued customer complaints.

(2) Clean and inspect the wells - There is no doubt that the wells require cleaning and inspection. The district does not currently have the resources to clean and inspect the wells. The LPA has determined that the wells are under the influence of surface water due to the high organic content in the water and proximity to the Colorado River. The wells should be cleaned and inspected. With this alternative a certain contingency should be in place in case any repairs are identified to be completed after the cleaning and video inspection. The upper casing or annular seals of one or both of the wells may have been compromised. This is unknown for sure at this time, as a video inspection has not been completed. However, the high THM in the water indicates the presence of organics in the raw water, which would indicate that there is a large bacteria growth inside the wells, there is existing organics in the ground influencing the water, or that the surface water is influencing the wells, through a deficiency in one or both of the wells. The fact that the rate of production is reduced seems to indicate that a biofilm may be covering the lower perforations of the well casing. Due to the close proximity of the river (i.e. 30 feet), replacing the annular seal and casing, if possible, would probably not change the determination that the wells are directly influenced by surface water.

(3) Drill new wells and abandon the existing wells - It may be possible to drill new wells within the existing plant site. Drilling (2) new wells per municipal standards could possibly remove the need to treat the water to the Surface Water Treatment Rule. It is uncertain if the organic load would be reduced due to the presence of wood and other organics within the water bearing strata. It is likely that there would continue to be high concentrations of iron and manganese. Drilling new wells would require new piping, pumps, and shade structures. The time frames for obtaining the discretionary permits would extend the time frame for the system to get back into compliance. If the existing wells are beyond repair and require replacement, this is a viable option.

(4) Bypass the wells and use surface water - The plant is close enough to the Colorado River Oxbow that surface water could be siphoned directly into the plant for treatment. If this alternative is implemented it would be recommended to replace the existing treatment system entirely with a new approved alternative technology filter and clarifier system.

TANKS

There are two alternatives for the two existing tanks: Repair or replacement. Doing nothing is not an option; the district is operating on one tank and the other tank is showing signs of failure.Both tanks are in need of repair or replacement.

Rather than make the extensive metal repairs and recoating of the tanks, it is likely that it is more cost-effective to demolish the existing tanks and replace them with new bolted steel tanks. The reasons for this are as follows:

1. The condition of the interior of the south tank is poor. There is substantial corrosion on the floor, rafters, center column. The interior ladder is unusable. The corrosion of the floor has caused leaks, causing the tank to be taken out of service. The roof, ladder, vent, floor and internal support structure would need to be replaced. Then the metal that remained would be sandblasted and recoated. The

renovation estimate from a tank manufacturer is $126,595. The estimated cost to replace the tank is $125,000.

2. Fewer unforseen conditions will arise or potential change orders. The condition of the north tank is unknown. It is likely that it is in poor condition as it was installed at the same time as the south tank which has failed; actual costs of the metal repairs will be unknown until the tank is drained and sandblasted. Required metal replacement is often discovered after sandblasting operations are complete.The required metal repairs may be more extensive than can be seen from the surface

3. Operation and maintenance costs are reduced.

4. The existing north tank appears to be moving on the foundation, causing the piping to twist and move. After demolishing and removing the north tank, the foundation pad can be inspected for long-term structural stability.

WATER TREATMENT SYSTEM

Chlorination System

The alternatives for this are to replace the existing gas chlorination system with a sodium hypochlorite liquid storage or calcium hypochlorite tablet and injection system, or to do nothing. The installation of a sodium or calcium hypochlorite system will reduce the operational complexity and costs at the plant.

Additional alternatives include installing an alternative disinfectant system, such as chloramines. Changing to another disinfectant will increase the operational complexity and increase costs to the District.

Changing from gas chlorine to sodium or calcium hypochlorite is a way of to ensure that the proper disinfection residual levels are carefully controlled and proper residual monitoring is conducted.

The exisitng flow is an average of 35,000 gallons per day (gpd), or about 50gpm, 12 hours a day. The plant will be capable of 400gpm, or 288,000 gpd with the wells pumping 12 hours a day. Based on a 12.5% chlorine solution, 1.3ppm residual, 288,000 gpd and the required prechlorination for the oxidation of iron, the plant will require at least 11.50 gallons of undiluted liquid chlorine solution, or two to four caclium hypochlorite tablets per day. If the sodium hypochlorite solution is diluted to a 4% solution (1:3), the plant would require 34 gpd of the diluted chlorine solution. A 30 day supply with dillution capacity would require a 1,000 gallon capacity tank. For the current demand of 35,000 gpd, the plant would require approximately 42 gallons of 12.5% liquid sodium hypochlorite solution per month. The above are estimates obtained by doubling the chlorine residual demand, since the amount of chlorine used for oxidation of iron is unknown at this time.

Reasons to use calcium hypochlorite tablets:

1. The calcium hypochlorite tablets can be safely stored onsite and are relativley inexpensive. The tablets provide a consistent dosage without the generation of gas. It is a stable, low maintenance solution.

2. Sodium hypochlorite will degrade and have a loss of potency over time, causing variable solution strength and dosing problems. It also requires storage tanks and secondary containment systems are required. It is expensive to deliver small quantites of sodium hypochlorite.
3. Gas chlorine is hazardous, expensive, requires monitors, detectors and specially trained workers and is risky. Gas chlorination requires risk management plans to be prepared periodically.

Water Monitoring and Reporting System

Per the Surface Water Treatment Rule, turbidity and chlorine residual meters and recorders will need to be installed. The existing water treatment system will be modified to incorporate additional monitoring equipment for turbidity and chlorine levels to ensure proper disinfection is being maintained on a continuous basis. If the wells continue to be classified as under the direct influence of surface water, the installation of monitoring and reporting equipment is necessary.

Water Filter

The alternatives for the water filter system include:

(1) Do nothing - If nothing is done to enhance the filtration at the plant, the existing filter will continue to function as it has. The filter appears to be in good condition and is functioning as manufactured. It seems to be able to filter the water per the Surface Water Treatment Rule, with some modifications to the monitoring and reporting systems. There is only one filter, however, and for redundancy there should be two.

(2) Install an additional Tonka Equipment Co. Filter - There is an existing control panel for the Tonka filter. Installing an additional Tonka pressure filter, piped in parallel with the existing filter would be beneficial so that the existing control panel could be used. The control panel may need minor modifications for the added filter. Also, the chemical requirements (potassium permanganate) would be the same for both filters. If the additional filter is installed the district will have a redundant filter in case one of the filters needs maintenance. It will also increase the efficiency of the filter by reducing the flow through the filters by running both filters in parallel. This alternative would not increase the capacity of the plant; the second filter would be for redundant purposes only. It has been confirmed that the existing control panel can accommodate the added filter with some minor modifications.

(3) Install a filtering system that has been approved for surface water treatment - The water system could be replaced altogether with an approved alternative technology filter system with an upflow clarifier and downflow gravity multimedia filter. The system could bypass the wells and draw water from the nearby surface water of the Colorado River. This alternative would require a new control system, two new filters, a coagulation and clarification system and modifications to the pumps and wells to draw in surface water. The existing Tonka filter could be modified to be used as a prefilter to remove organics prior to the final filtration process. While this alternative is the best from a technical view, this may not be feasible due to the costs. It is also likely that the surface water supply would not benefit from the bank filtration treatment currently obtained by drawing from the existing wells. This would also likely require the District to apply to the State Water Resources Control Board for water rights.

(4) Install a coagulation phase to the water treatment system - There is no existing coagulant system. The plant uses potassium permanganate to remove iron and manganese (in conjunction with the

existing Tonka filter).The raw water turbidity was sampled to be less than 1.0 NTU. The treated water is less than 0.3 NTU and is typically 0.1 NTU or less after the existing Tonka Filter. The turbidity rapidly rises after a backwash, then declines and levels off at 0.1 NTU after about 15 minutes.A coagulant system may reduce this time by increasing the floc size. The filter to waste cycle should be extened to at least 15 minutes after a backwash. Adding a coagulation step may also help with the finished water quality and reduce TTHM. Prior to the iron and manganese filter step, a coagulant would introduced and mixed into the raw water. The system would include a storage tank with double containment, a shade structure, metering pumps, a static mixer, piping, a clarifier and pumps.. This would add complexity to the existing treatment plant and additional costs with operation and maintenance.Coagulant Injection System. The addition of a coagulant injection system would require the purchase of the coagulant and maintenance of the coagulation system. The existing wells provide a form of pre-treatment by naturally filtering the surface water from the Colorado River through the native soils. Because of this and the fact that the raw water turbidity is 1.0NTU or less, it is unclear how much benefit a coaguant stage would provide.

Disinfection Byproduct Reduction
The alternatives that are considered for the reduction of THM on this project are:

(1) Install a Granular Activated Carbon (GAC) post filtration system - The GAC systems have proven effective in removing significant amounts of THM in treated water. The drawback to the GAC is the high cost of maintaining the filters. The carbon media must be replaced periodically. The District does not have the resources to replace the expensive media.

(2) Remove Disinfection Byproduct Precursors - Removing organics prior to chlorination would reduce the THM before formation. This alternative would require the installation of prefilters and require replacement of the exisitng filter with two new approved SWTR filters.

(3) Install an aeration/forced air system in one storage tank - In this alternative, the two storage tanks would be run in series. The south tank would be used for the chlorine contact time (CT). After the CT is met in the south tank, the treated water would then proceed to the north tank, where an aeration and forced air system would reduce the THM by off-gassing the THM and forcing it into the atmosphere. This appears to be the most cost-effective solution at this time.

EXISTING BOOSTER PUMP STATION

The alternatives include doing nothing and replacing the existing casing with stainless steel casings. The existing casings are corroding and require replacement; the district does not have the resources to replace the casings.

D. SELECTED CONSTRUCTION PROJECT

- Describe the proposed construction project and identify all major components.

WELLS

Since the condition of the wells is unknown until an inspection is completed, the most cost effective and time saving alternative is to rehabilitate the existing wells. The (2) existing wells will be cleaned, rehabilitated and inspected before and after the cleaning. The shade structures and the lineshaft and pump assemblies will need to be removed, and a liquid acid descaler brushed inside the wells. After completion of the pump and casing cleaning, the lineshaft and shade structures will be replaced. With this alternative a certain contingency should be in place in case any repairs are

identified to be completed after the cleaning and video inspection. It is anticipated that when the cleaning is completed and the pumps replaced, the capacity of the wells will increase and water quality will be improved with a corresponding reduction in TTHM formation.

If it is determined after the video inspection that the wells are irrepairable, one or both of the wells will be redrilled at the water plant, depending on the need. The new wells can be drilled adjacent to the old wells. The new wells will include new pumps and piping. If there is a way to save the existing wells, it will be done in lieu of redrilling and replacement.

TANKS

The south tank will be replaced with a new bolted steel tank with the same capacity as the existing, 125,000 gallon tank. The tank will be disassembled, demolished and removed. The north tank will also be replaced. The south tank will be completed first, while the north tank remains operational. After the south tank is constructed and in service, the north tank will be demolished, removed and replaced. The existing tank foundations, consisting of an unachored gravel pad will be removed and replaced with a concrete ring and anchors.

Both tanks will be 24' high with a diameter of 29 feet, bolted steel tanks. The tanks come pre-coated from the factory, and will meet AWWA requirements for bolted steel tanks. The tanks will include new appurtenances, such as roof vents, roof hatches, ladders, overflow piping, inlet/outlet piping, and liquid level indicators. After completion, the tanks will be cleaned, disinfected, filled and tested for bacteria before placing them into service.

The piping for the tanks was previously installed such that the tanks can be operated in series.The piping can be installed inside the tank to disperse the water evenly inside the tank, preventing stagnant and aging water within the tank (and the formation of excessive THM). The piping will be configured such that water will enter the at the top of the tank and exit the bottom, separated by 180 degrees. There will be internal piping to direct the influent water left and right. The tanks will be operated in series. It is anticipated that a 0.1 baffling factor will be assigned. The south tank will be used for the contact time (CT), and a "GridBee" aeration or similar system will be installed in the north tank for TTHM reduction. The TTHMs will be off-gassed during the aeration process, and a blower system will be installed on the top of the tank to force the gases into the atmosphere.

The existing 8-inch overflow from the tanks drain to the nearby oxbow. There is no air gap from the tank overflow piping, so a flapper valve, such as the Tideflex valve, will be installed at the termination point of the pipe.

UPGRADES AND MODIFICATIONS TO THE WATER TREATMENT SYSTEM

The existing water treatment system will be modified to:

1. Incorporate additional monitoring equipment for turbidity and chlorine levels to ensure proper disinfection is being maintained on a continuous basis. The project will include the installation of a chlorine analyzer and continuous turbidimeter, with digital recorder, plant shut down alarms, and controls to meet the Surface Water Treatment Rule.

2. Modify water storage tank plumbing to prevent direct filling of the tanks from the wells. A THM reduction unit, consisting of an aeration and forced air system will be installed with controls for VOC volatilization in the second water storage tank. The first tank will be used for contact time (CT).

3. Install one multi-media treatment Tonka filter with the same capacity as the existing filter (400gpm). The existing filter consistantly produces water with less than 0.1NTU. A reduction in filter size may decrease the effluent quality of the finished water. Discussions with the filter manufacturer indicate that there are smaller filters, but there would not be substantial cost savings to reduce the filter size due to the amount of work to design and construct the filter.
The installation of the proposed second filter would not increase the capacity of the plant (not growth inducing); the second filter would be for redundant purposes only. The existing control panel is cabable of operating two filters, so replacement of the control panel will not be necessary. The installation of two filters at 400 gpm each will allow the filters to operate at an optimal filter loading rate of 2.0 gpm/SF or less. Also, the installation of the second filter will allow for one 8-hour shift of operation, thus the plant will not be requred to run unmanned.

4. The project may include the installation of a coagulation system including a storage tank with double containment, a shade structure, a static mixer, a clarifier, controls, and piping as necessary for reducing organics and turbidity. Before the coagulation system is installed however, the turbidimeter and chlorine anaylzer will be installed and placed in service for a time. The data will be reviewed by the State and the LPA. If the filter(s) are effective in consistnently producing treated water with less than 0.3NTU, the coagulation system will not be installed.

5. Replace the existing chlorine gas disinfection system with a calcium hypochlorite tablet system and controls. It has been estimated that at the current demand, the District will need one to two tablets per day. A storage tank will not be necessary. The new metering pumps will come in the calcium hypochlorite package to allow the operators to accurately control the amount of chlorine fed into the system. A shade structure or building will not be necessary. The existing chlorine building will be utilized. There is an exisitng ventilation system.

It has been confirmed that the prechlorination is necessary to oxidize the iron. The potasium permanganate oxides the manganese. According to the filter manufacturer, the calcium hypochlorite is compatible with the filter for prechlorination purposes. The prechlorination should be kept to the minimum needed to oxide the iron, as prechlorination causes THM formation due to the presence of organic material in the raw water.

EXISTING BOOSTER PUMP STATION

The cast iron casings in the existing booster pump will be replaced with stainless steel casings.

OPERATION AND MAINTENANCE PLAN

The Palo Verde Water System operation and maintenance plans will be modified to reflect plant upgrades and cross connection controls installed at the plant to protect the water supply from contamination that would pose a health risk to the community.

- Describe how this project will solve the problem and provide an analysis of its effectiveness. List all anticipated operational challenges that the project may impose and include any proposed solutions.

The proposed project will reduce disinfection byproducts (TTHMs) below the primary Maximum Contaminant Level with the installation of the aeration equipment inside the storage tanks, the replacement of the chlorination system, the rehabilitation of the wells, and the installation of (1) filter and monitoring equipment. The operators will be able to better monitor the quality of the finished water through the installation of turbidimeters and chlorine analyzers.

- Determine if the project is consistent with local/county planning. List the local/county planning documents used to make the determination.

  The project is consistent with the CEQA document prepared by the County of Imperial.

- Does the project contain, either partially or completely, green infrastructure components as defined by CDPH guidance (Enclosure 7)? ☐ Yes ☒ No
  If **yes**, enter the estimated cost of the green portion and describe the green elements below.

  ———

- Is the selected construction project a consolidation project? ☐ Yes ☒ No
  If **yes**, please list all parties involved and identify the restructuring water system that will remain after the project is complete. A Supplemental Information Form (enclosure 13) for each involved water system must be submitted with the application.
  N/A

E. ELIGIBILITY

- List any project elements that may be ineligible or partially eligible.

  There are no known ineligible elements of the project.

- List any land that will be purchased or acquired for this construction project, discuss the necessity for such land, and justify the appropriateness of the size of the land being purchased. (NOTE: Only land or land access that is integral to the construction of source, treatment or distribution facilities is eligible for SDWSRF funding).

  No land will be purchased or acquired for this project.

F. FINAL PLANS AND SPECIFICATIONS

- Describe the final plans and specifications as well as other technical aspects of the project, including the overall conceptual design (e.g. layout, flow diagrams, choice of unit processes, redundancy, reliability features).

  ———

- Attach a schematic/map of the system which includes the proposed facilities as described above.

- Provide water demand and capacity statistics used to design the project. Include a description of the methodology used to determine the peak flow water demands, the anticipated growth and its resultant water demand, and fire flow.

- Describe how industrial and commercial water users impact the peak flow demand.

  The townsite of Palo Verde does not have industrial users. The small number of commercial water useres do not impact the peak flow demand.

- List all major project components and identify their estimated useful life.

  Aeration/Forced Air equipment - 15 years

  Iron/Manganese Fiter - 30 years

  Calcium Hypochlorite Injection System - 15 years

- Attach a detailed cost breakdown of the entire project, which lists all major construction components, non-construction costs, and ineligible items.

- The total project cost is $1,563,680.00
- The eligible project cost is $1,563,680.00
- The annual increase in operations/maintenance cost is $1,200.00

G. PROPOSED SCHEDULE

Attach a project schedule. Construction projects are required to be completed no later than three years from the funding agreement execution date.

H. ATTACHMENTS TO TECHNICAL REPORT

Please attach the following documents to be included with this SDWSRF Applicant Engineering Report. Make sure your water system's name and pre-application number are on every additional attachment.

	Attached Information
☒	Schematic/map of system's existing facilities
☒	Documents justifying the ranked problem
☒	Schematic/map of system's proposed facilities
☒	Detailed cost estimate
☒	Proposed project schedule

Report prepared by: David Dale 6/11/14

Authorized Representative's Signature Date

David Dale, PE

Authorized Representative's Name

Consulting Engineer

Authorized Representative's Title